

Journal of the United Service Institution of India.

VOL. XXX—1901.

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Captain ...	Carnell, N. M. ...	Burma Railway Vols.
Major ...	Carpendale, P. M. ...	21st Punjab Infantry.
Captain ...	Carpendale, W. M. ...	8th Bengal Lancers.
Captain ...	Carson, T. ...	Royal Irish Rifles.
Major ...	Carson, W. P. ...	Retired List.
Major ...	Carter, W. G. ...	Essex Regt.
Major ...	Carthew-Yorstown, M. E.	4th Bombay Cavalry.
Captain ...	Cartwright, C. M. ...	6th Bombay Cavalry.
Lieutenant ...	Cattell, G. L. ...	25th Madras Infantry.
Major ...	Cavendish, C. C. ...	2nd Highland L. I.
Colonel ...	Chamberlain, N. F. F. G.	I. S. Corps.
Lieutenant ...	Chamier, A. T. ...	R. E.
General, v.c., C.B.	Channer, G. N. ...	Retired List.
Lt.-Col., v.D. ...	Chanter, E. J. ...	2nd P. Vol. Rifles.
Colonel ...	Chapman, L. J. A. ...	R. A.
Lt.-Col., v. c. ...	Chase, W. St. L. ...	7th Bombay Infantry.

ORDINARY MEMBERS.—(Contd.)

Rank.		Name.		Corps, &c.
Major	...	Chenevix-Trench, G. F.		Political Agent.
Captain	...	Chesney, N. E.	...	2-5th Gurkha Rifles.
Lieutenant	...	Cheyne, A. Y.	...	15th Bengal Lancers.
Lt.-Colonel	...	Chisholme, J. J. S.	...	Late 5th Lancers.
Captain	...	Chitty, W. W.	...	19th Bombay Infantry.
Lieutenant	...	Chrystie, G.	...	5th Punjab Cavalry.
Major	...	Churchill, A. B. N.	...	R.A.
Captain	...	Clay, C. H.	...	43rd Gurkha Rifles.
Captain	...	Clay, S.	...	43rd Gurkha Rifles.
Lieutenant	...	Clayton, E. R.	...	2nd Oxfordshire L. I.
Major-Genl.	...	Clifford, R. M.	...	I. S. Corps.
Major	...	Climo, V. C.	...	West India Regt.
Captain	...	Close, L. H.	...	R. E.
Lt.-Colonel	...	Clothier, R. F.	...	27th Madras Infantry.
Major	...	Coates, J. U.	...	R. A.
Lt.-Colonel	...	Coats, G. H. B.	...	25th Punjab Infantry.
Esquire	...	Cockle, M. J. D.	...	.....
Captain	...	Coldstream, W. M.	...	R. E.
Major	...	Cole, A. W. G. L.	...	1st R. Welsh Fusiliers.
Esquire	...	Cole, C. J.	...	Public Works Dept.
Captain	...	Cole, E. H.	...	11th Bengal Lancers.

ORDINARY MEMBERS—(Contd.)

Rank.		Name.		Corps, &c.
Lt.-Colonel	...	Cole, H. H.	...	Late R. E.
Major	...	Coleman, W. F.	...	Suffolk Regiment.
Lieutenant	...	Collen, E. H. E.	...	R. A.
The Hon'ble Maj.-Genl., G.C.I.E., C.B.		Collen, Sir E. H. H.	...	Military Member, Viceregal Council.
Lt.-Colonel	...	Collette, C. H.	...	1st Shropshire L. I.
Major	...	Colomb, F. C.	...	42nd Gurkha Rifles.
Captain	...	Combe, L.	...	1st Scottish Rifles.
Major	...	Comins, H.	...	1st Bengal Infantry.
Captain	...	Conner, R.	...	1st Gloucestershire Regt.
Captain	...	Conran, W. L.	...	25th Bombay Infantry.
Captain	...	Cook, H. R.	...	R. A.
Lt.-Colonel	...	Cook, W.	...	43rd Gurkha Rifles.
Maj.-Genl.	...	Cooke, T. A.	...	.....
Major	...	Cookson, G. A.	...	16th Bengal Lancers.
Captain	...	Cooper, H. A.	...	1st Sikh Infantry.
Lieutenant	...	Corbyn, E. C.	...	18th Bengal Lancers.
Major	...	Cordue, W. G. R.	...	R. E.
Lt.-Col., D.S.O.	...	Couchman, G. H. H.	...	Somersetshire L. I.
Colonel	...	Courtenay, E. R.	...	Late 11th Hussars.
Esquire	...	Coutts, E. G.	...	Public Works Dept.
Major	...	Cowper, M.	...	10th Bengal Lancers.

ORDINARY MEMBERS.—(Contd.)

Rank.		Name.		Corps, &c.
Major	...	Cox, H. V.	...	21st Madras Infantry.
Lieutenant	...	Cox, T. S.	...	16th Bengal Lancers.
Lt.-Colonel	...	Coxhead, J. A.	...	R. A.
Br.-General	...	Craigie, J. H. S.	...	Comdg. Sirhind Dist.
Maj.-Genl., v. c.	...	Creagh, O'M.	...	Comdg. 2nd Infy. Bde.
Captain	...	Crookshank, C. de W.	...	R. E.
Captain	...	Crosthwaite, J. G.	...	Asst. Commissioner.
Major	...	Crowe, J. H. V.	...	R. A.
Major	...	Crowther, R. T.	...	23rd Punjab Pioneers.
Captain	...	Cruddas, H. W.	...	38th Bengal Infantry.
Captain	...	Cumberlege, C. J.	...	23rd Bombay Infantry.
Captain	...	Cunningham, A. H.	...	R. E.
Major	...	Cuppige, W. A.	...	5th Bengal Infantry.
Major, D.S.O.	...	Cure, H. C.	...	1st Gloucestershire Regt.
Colonel, C.B.	...	Currie, T.	...	1st N. Staffordshire Regt.
Captain	...	Dallas, A. G.	...	16th Lancers.
Maj.-Genl., C.B.	...	Dalrymple, W. L.	...	Retired.
Captain, C.I.E.	...	Daly, H.	...	Dy. Secy., Foreign Dept.
Colonel	...	Dalton, J. C.	...	R. A.
Captain	...	Daunt, W. D.	...	C. I. Horse.
Lieutenant	...	Davidson, S. R.	...	S. C.

ORDINARY MEMBERS—(Contd.)

Rank.	Name.	Corps, &c.
Captain ...	Davidson, W. L. ...	17th Bengal Infantry.
Captain ...	Davies, H. R. ...	2nd Oxfordshire L. Infy.
Captain ...	Davis, C. ...	1st Bengal Lancers.
Major ...	Davison, K. S. ...	2nd Bengal Lancers.
Captain ...	Davy, R. M. M. ...	1st Gloucestershire Regt.
The Hon'ble ...	Dawkins, C. E. ...	.....
Major ...	Dawkins, H. S. ...	R. A.
Captain ...	Dawson, E. ...	Rangoon Vol. Rifles.
Captain ...	Day, A. C. Fitz R. ...	1st Dorsetshire Regt.
Major ...	Day, J. G. ...	R. E.
Colonel ...	DeBrath, E. ...	Dy. Secy., Mily. Dept.
Lieutenant ...	deLabilliere, E. G. D. ...	24th Punjab Infantry.
Captain, C.M.G., C.I.E. ...	DeLæssø, A. F. ...	Pol. Agent.
Captain, D.S.O. ...	DeLisle, H. DeB. ...	2nd Durham L. Infy.
Captain ...	Denne, A. R. ...	2nd Madras Infantry.
Colonel ...	Des Vœux, C. H. ...	36th Sikhs.
Lt.-Colonel ...	Dewar, D. E. ...	R. A.
Captain ...	Dick, A. R. ...	2nd Puniab Cavalry.
Captain ...	Dickson, J. H. ...	A. C. General.
Captain ...	Dill, R. ...	2nd Yorkshire L. I.
Lt.-Colonel ...	Dillon, G. F. H. ...	26th Punjab Infantry.

ORDINARY MEMBERS.—(Contd.)

Rank.		Name.		Corps, &c.
Lieutenant	...	Dixon, C. S.	...	Royal Irish Rifles.
Major	...	Dixon, P. E.	...	R. E.
Major	...	Debbin, W. J. K.	...	1st Sikh Infantry.
Esquire	...	Donaldson, P.	...	Presdt., Simla Mplty.
Captain	...	Dennan, W.	...	Asst. Mily. Accountant.
Major-Genl., C. B., D.S.O.	...	Dorward, A. R. F.	...	R. E.
H.E. Rear-Admiral	...	Douglas, A. C.	...	Naval C-in-C., East Indies.
Captain	...	Douglas, J. A.	...	2nd Bengal Lancers.
Captain	...	Dowding, H. H. H.	...	2nd Essex Regiment.
Major	...	Dowell, G. C.	...	R. A.
Captain	...	Drummond, E. J.	...	I. S. Corps.
Lt.-Col., C.I.E.	...	Drummond, F. H. R.	...	C. I. Horse.
Lieutenant	...	Duckett, J. S.	...	9th Lancers.
Captain	...	Dudgeon, F. A.	...	D. A. A. General.
Colonel, C.I.E.	...	Duff, B.	...	D. C. A. General.
Captain	...	Duff, G. M.	...	R. E.
Major	...	Duhan, W. W. T.	...	R. A.
Major	...	duMoulin, L. E.	...	Royal Sussex Regt.
Lt.-Colonel, M.D.	...	Duncan, A.	...	I. M. S.
Major, M.B.	...	Duncan, G.	...	I. M. S.
Captain	...	Duncan, S.	...	Late Gloucestershire Regt

ORDINARY MEMBERS—(Contd.)

Rank.	Name.	Corps, &c.
Captain ...	Dunolly, K. J. G. ...	5th Madras Infantry.
Major ...	Dunsterville, K. S. ...	R. A.
Colonel ...	Duperier, H. W. ...	R. E.
K.C.S.I., K.C.I.E. ...	Durand, Sir H. M. ...	C. S.
Colonel ...	Duthy, A. E. ...	R. A.
Br.-Genl., C.B. ...	Dyce, G. H. C. ...	Offg. D. A. General.
Captain ...	Dyer, R. E. H. ...	29th Punjab Infantry.
Major ...	Eardley-Wilmot, I. ...	18th Bengal Lancers.
Major ...	Earle, F. A. ...	Royal War. Regt.
Captain, D.S.O. ...	East, L. W. P. ...	R. A.
Captain ...	Eccles, C. J. ...	16th Lancers.
Major ...	Edwards, C. G. F. ...	5th Punjab Cavalry.
Captain, D.S.O. ...	Edwards, F. J. M. ...	3rd Bombay Cavalry.
Major, D. S. O. ...	Edwards, J. B. ...	C. I. Horse.
Lt.-General, C. B., D.S.O., A.-D.-C. ...	Egerton, C. C. ...	Comdg. the Forces Punjab.
Captain ...	Egerton, C. P. ...	Dy. Commissioner.
Maj.-Genl., K.C.B. ...	Elles, Sir E. R. ...	Offg. A. General in India.
Major-General, C.B. D.S.O. ...	Elliot, E. L. ...	I. G. Cavalry in India.
Lt.-Genl., C.B. ...	Evans, H. M. ...	I. S. Corps.
Major, D.S.O. ...	Evatt, J. T. ...	39th Bengal Infantry.
Captain ...	Everett, H. J. ...	Somersetshire L. I.

ORDINARY MEMBERS.—(Contd.)

Rank.	Name.	Corps, &c.
Colonel ...	Exham, R. ...	R. A. M. C.
Captain ...	Fagan, H. R. ...	1st Punjab Infantry.
Lieutenant ...	Fagan, L. E. ...	6th Madras Infantry.
Lt.-Colonel ...	Faithfull, H. T. ...	31st Madras Infantry.
Br.-General ...	Fancourt, St. J. M. ...	Comdg. Rohilkand Dist.
Captain ...	Fane, V. B. ...	1st Punjab Cavalry.
Esqr., C.S.I., C.S. ...	Fanshawe, A. U. ...	D.-G. Post Office in India.
The Hon'ble, c.s.	Fanshawe, C. H. ...	Commissioner.
Captain ...	Fasken, W. H. ...	10th Bengal Lancers.
Captain ...	Faulknor, A. A. M. M. ...	2nd Bombay Infantry.
Major ...	Fayrer, J. O. S. ...	1-5th Gurkha Rifles.
Major ...	Fegen, M. F. ...	R. A.
Major ...	Fell, R. B. ...	1st Scottish Rifles.
Major D.S.O. ...	Fendall, C. P. ...	R. A.
Lt.-Colonel ...	Fenton, A. B. ...	A. A. General.
Captain ...	Fergusson, A. C. ...	R. A.
Captain ...	Fergusson H. C. ...	H. L. Infantry.
Lt.-Col., D.S.O. ...	Ferrier, J. A. ...	R. E.
Captain ...	Finch, C. ...	1st Bengal Lancers.
Captain ...	Finch, E. H. F. ...	D. A. A. G. for Muketry.
Major ...	Fink, G. H. ...	I. M. S.

ORDINARY MEMBERS—(Contd.)

Rank.	Name.	Corps, &c.
Esqr., C.S.I., C.S. ...	Finlay, J. F. ...	Secy., Finance Dept.
Lt.-Colonel ...	Finnis, H. ...	R. E.
Captain ...	Firth, E. W. A. ...	9th Madras Infantry.
Captain ...	Fisher, J. ...	1-2nd Gurkha Rifles.
Lt.-Colonel ...	FitzGerald, C. M. ...	A. C. General.
Captain ...	FitzMaurice, R. ...	R. A.
Captain ...	Foord, E. R. ...	Inspr., Mily. Accounts.
Lt.-Colonel, C.B. ...	Forbes, W. E. G. ...	Royal War. Regt.
Captain ...	Ford, C. A. W. ...	4th Bombay Infantry.
Major ...	Forde, L. ...	R. A.
Captain ...	Forestier-Walker, C. E. ...	R. A.
Lieutenant ...	Forrest, R. T. E. L. ...	B.B. & C.I. Ry. V.L. Rifles.
Captain ...	Forth, C. T. W. ...	30th Punjab Infantry.
Lt.-Colonel ...	Foss, K. M. ...	26th Madras Infantry.
Captain ...	Fox-Strangways, T. S. ...	Royal Irish Rifles.
Col., C.I.E., Q.H.P.	Franklin, B. ...	I. M. S.
Captain ...	Fraser, L. D. ...	R. A.
Captain ...	Fraser, N. G. ...	4th Bombay Cavalry.
The Hon'ble, K.C.S.I.	Fryer, Sir F. W. R. ...	Lt.-Governor, Burma.
Major ...	Fuller, R. W. ...	R. A.
Lieutenant ...	Furse, G. A. ...	R. A.

ORDINARY MEMBERS.—(Contd.)

Rank.		Name.		Corps, &c.
Captain	...	Fyffe, B. O.	...	Gloucestershire Regt.
Captain	...	Galloway, F. L.	...	R. A.
Lt.-Colonel	...	Gallwey, E. J.	...	Somerset L. Infy.
Lt.-Colonel	...	Garbett, C. H. V.	...	Bengal Laneers.
Lieutenant	...	Gardner, A.	...	R. E.
Captain	...	Gardner, R. M. S.	...	Gloucestershire Regt.
Captain	...	Garratt, H. S.	...	3rd Bombay Infantry.
Lt.-Colonel	...	Gartside-Tipping, R. F.	...	1st Bengal Lancers.
Lt.-General, K.C.B., A.D.C.		Gaselee, Sir A.	...	Comdg. China F. Force.
Colonel	...	Gastrell, G. D. C.	...	8th Bengal Infantry.
Maj.-Genl., K.C.B., D.S.O.		Gatacre, Sir W. F.	...	Comdg. Eastern Dist.
Lieutenant	...	Gaussen, A. W. D.	...	H. Lt. Infantry.
Lt.-Colonel	...	Gibbs, M. I.	...	I. S. C.
Captain	...	Gilbert, G. E. L.	...	34th Punjab Pioneers.
Captain	...	Giles, A.	...	13th Bengal Infantry.
Captain	...	Glasgow, W. J. T.	...	R. West Surrey Regt.
Lt.-Colonel	...	Glennie, E.	...	R. E.
Lt.-Colonel	...	Goad, H.	...	Dir., Army Remount Department.
Major	...	Godfrey, S. H.	...	Sett. Comr., Kashmir.
Lieutenant	...	Godwin, C. A. C.	...	3rd Punjab Cavalry.
Captain, C.I.E.	...	Goodridge, W. S.	...	R. N., Dir., R. I. Marine.

ORDINARY MEMBERS—(Contd.)

Rank.	Name.	Corps, &c.
Colonel, C.I.E. ...	Gordon, J. C. F. ...	I. S. Corps.
Captain ...	Gordon, J. L. R. ...	15th Sikhs.
Colonel ...	Gordon, R. ...	I. S. Corps.
Lt.-Colonel ...	Gordon, S. D. ...	D. A. A. General.
Captain, v.c. ...	Gordon, W. E. ...	Gordon Highlanders.
Lt.-Colonel ...	Gore, St. J. C. ...	5th Dragoon Guards.
Lt.-Colonel ...	Gott, G. A. ...	7th Bombay Lancers.
Major ...	Gough, S. C. ...	5th Bengal Cavalry.
Major, D.S.O. ...	Graham, H. W. G. ...	5th Lancers.
Captain ...	Graham, M. D. ...	Northamptonshire Regt.
Major ...	Grant, C. ...	D. A. A. Genl. Muskty.
Colonel ...	Grant, H. G. ...	U. Active List.
Maj.-Genl., C.B. ...	Grant, H. F. ...	I. G. Cavalry, England.
Colonel ...	Grant, Jas. ...	S. C.
Lt.-Colonel ...	Grant, S. ...	R. E.
Major ...	Grant, S. G. ...	Scottish Rifles.
Captain ...	Grant-Duff, A. ...	Royal Highlanders.
Colonel, C.B. ...	Graves, B. C. ...	S. C.
Lt.-Colonel ...	Gray, W. du G, ...	1st Punjab Infantry.
Lt.-Colonel ...	Greenfield, R. M. ...	A. A. General.
Captain ...	Greenhill-Gaadyne, A.D.	Gordon Highlanders.

ORDINARY MEMBERS—(Contd.)

Rank.	Name.	Corps, &c.
Lt.-Colonel	Grey, A.	Punjab Light Horse.
Captain	Grey, W. G.	3rd Madras Infantry.
Esquire, C.I.E.	Griesbach, C. L.	Dir., Geological Survey of India.
Captain	Griffith, G. H.	R. E.
Lieutenant	Grimley, W. M.	Asst. Military Accott.
Captain	Grimshaw, E. W.	24th Madras Infantry.
Captain	Grimston, R. E.	6th Bengal Cavalry.
Captain	Grimston, S. B.	18th Bengal Lancers.
Lieutenant	Grove, H. M.	S. C.
Lt.-Colonel	Grover, M. H. S.	2nd Punjab Cavalry.
Major	Guinness, E.	R. A.
Captain	Gunning, C. J.	1st Madras Pioneers.
Colonel	Gwatkin, F. S.	A. A. General.
Lieutenant	Hadow, A. L.	Norfolk Regt.
Colonel	Haggard, C.	Late Royal Irish Rifles.
Colonel	Hailes, W.	Comdg. at Fyzabad.
Captain	Hall, H. C.	R. A.
Lieutenant	Hall, R. M.	13th Bengal Lancers.
Lieutenant	Hallet, R. L. H.	18th Bengal Infantry.
Lieutenant	Hamer, M. A.	29th Bombay Infantry.
Captain	Hamilton, C.	2nd Bengal Infantry.

ORDINARY MEMBERS.—(Contd.)

Rank.	Name.	Corps, &c.
Maj.-Genl., C.B., D.S.O.	Hamilton, Ian S. M. ...	.....
Major, D. S. O. ...	Hamilton, W. G. ...	D. A. Q. M. General.
Col., V.C., C.B., D.S.O., A.-D.-C.	Hammond, A. G. ...	I. S. Corps.
Colonel, C.B. ...	Harley, G. E. ...	A. A. General.
Lt.-Colonel ...	Harman, C. E. ...	2nd Connaught Rangers.
Esquire ...	Harington, H. S. ...	Chief Engr. K.-S. Ry.
Major ...	Harris, A. P. D. ...	17th Bengal Infantry.
Lt.-Colonel ...	Harris, C. W. ...	2nd Bengal Infantry.
Captain ...	Harrison, T. A. ...	Asst. Secy., Mily. Dept.
Colonel ...	Hart, H. H. ...	R. E.
Br.-Genl., V.C., K.C.B.	Hart, Sir R. C. ...	Comdg. Quetta Dist.
Captain ...	Harvest, H. de V. ...	9th Madras Infantry.
Major ...	Harvey, J. E. ...	R. A.
Surgn.-Genl., C.B., D.S.O., M.D.	Harvey, R. ...	I. M. S.
Lt.-Colonel ...	Haughton, T. H. ...	20th Madras Infantry,
Lt.-Colonel ...	Hawkes, H. M. P. ...	Comy. General.
Lieutenant ...	Hawkes, R. ...	1st Bengal Infantry.
Lt.-Colonel ...	Hawkins, F. ...	1st Bengal Infantry.
Lieutenant ...	Hawkins, W. ...	1st P. Vol. Rifles.
Major ...	Hayden, F. A. ...	West Riding Regiment.
Lt.-Colonel ...	Hayes, C. H. ...	1st Bengal Lancers.

ORDINARY MEMBERS—(Contd.)

Rank.	Name.	Corps, &c.
Captain ...	Hayes, R. H. ...	Middlesex Regiment.
Captain ...	Head, G. ...	1st Norfolk Regiment.
Captain ...	Heaven, F. G. ...	Madras Railway Vols.
Captain ...	Heffernan, H. W. ...	19th Madras Infantry.
Lt.-Colonel ...	Hegan, E. ...	Late 5th D. Guards.
Major ...	Hendley, H. ...	I. M. S.
Captain, D.S.O. ...	Henegan, J. ...	10th Madras Infantry.
Lt.-Colonel ...	Henriques, E. N. ...	R. A.
Br.-General ...	Henry, G. ...	Offg. Q. M. G. in India.
Lt.-Colonel ...	Herbert, C. ...	Political Agent.
Lt.-Colonel ...	Herbert, L. ...	C. I. Horse.
Colonel ...	Hervey, H. de la M. ...	Comdg. K.-Kurram Force.
Lieutenant ...	Hickie, C. J. ...	Gloucestershire Regt.
Esquire, C.I.E. ...	Higham, T. ...	Public Works Dept.
Br.-Genl., C.B. ...	Hill, W. ...	Comdg. Derajat Dist.
Lieutenant ...	Hill, W. L. B. ...	Gloucestershire Regt.
Colonel ...	Hilliard, W. E. ...	Asst. Qr. Master Genl.
Lieutenant ...	Hilson, R. J. ...	31st Madras Infantry.
Lieutenant ...	Hislop, A. F. ...	5th Bombay Cavalry.
Maj.-Genl., C.B. ...	Hobday, T. F. ...	I. S. C.
Esquire ...	Hodson, C. W. ...	Dy. Secy., P. W. D.

ORDINARY MEMBERS.—(Contd.)

Rank.	Name.	Corps, &c.
Maj.-Genl., C.B. ...	Hogg, G. C.	I. S. Corps.
Lt.-Colonel ...	Hogge, C.	33rd Punjab Infantry.
Lt.-Colonel, C. I. E.	Hogge, J. W.	14th Sikhs.
Captain ...	Hoghton, F. A.	1st Bombay Infantry.
Captain ...	Holbrook, E. R. St. G....	West Yorkshire Regt.
Captain ...	Holland, P.	4th Punjab Infantry.
Captain ...	Holland-Pryor, P.	13th Bengal Lancers.
Captain ...	Holloway, B.	2nd Madras Lancers.
Major ...	Holloway, E. L.	4th Madras Pioneers.
Captain ...	Holman, H. C.	16th Bengal Lancers.
Captain ...	Home, J. M.	2-2nd Gurkha Rifles.
Captain ...	Houison-Craufurd, J. A.	7th Bombay Infantry.
Captain ...	Howell, E. A. R.	A. C. General.
Lieutenant ...	Howell, P.	Corps of. Guides.
Colonel ...	Howlett, A.	12th Madras Infantry.
Captain ...	Hudson, A. K.	17th Bengal Lancers.
Captain ...	Hudson, T. R. C.	R. A.
Lt.-Col., D.S.O. ...	Huggins, P. G.	21st Madras Infantry.
Lieutenant ...	Hughes, C. C. A. A.	14th Bengal Lancers.
Major ...	Hughes, F. T. C.	Erinpura Irregular Force
Major ...	Hume, C. V.	R. A.

ORDINARY MEMBERS--(Contd.)

Rank.	Name.	Corps, &c.
Lt.-Colonel ...	Humphery, S. ...	Gloucestershire Regt.
Major ...	Hutchins, H. L. ...	A. C. General.
Lieutenant ...	Hutchinson, C. A. R. ...	41st Bengal Infantry.
Lieutenant ...	Hutchinson, C. G. ...	33rd Madras Infantry.
Colonel ...	Hutchinson, H. D. ...	Dir. Mily. Edn. in India.
Captain ...	Ievers, O. G. ...	Cant. Magistrate.
Captain ...	Iggulden, H. A. ...	2nd Derby. Regt.
Lieutenant ...	Iles, F. W. ...	10th Bengal Infantry.
Lt.-Colonel ...	Iremonger, R. G. ...	33rd Madras Infantry.
Esquire, C.S.I. ...	Irwin, G. R. ...	C. S.
Major ...	Ivatt, G. A. ...	Lincolnshire Regt.
Lt.-Colonel ...	Jackson, J. ...	9th Madras Infantry.
Captain ...	Jacob, C. W. ...	24th Bombay Infantry.
Captain ...	Jacob, H. F. ...	Asst. Pol. Agent.
Captain ...	James, W. B. ...	2nd Bengal Lancers.
Br.-Genl., C.B. ...	Jeffreys, P. D. ...	Comdg. Narbada Dist.
Major ...	Jellett, J. H. ...	R. A. ...
Captain ...	Jennings-Bramly, H. ...	Royal Highlanders.
Lt.-Genl., C.B. ...	Jennings, R. M. ...	Comdg. Oudh District.
Captain ...	Jermyn, T. ...	D. A. A. General.
Lieutenant ...	Jerram, H. ...	Asst. D. Mily. Edn. in India.

ORDINARY MEMBERS—(Contd.)

Rank.		Name.		Corps, &c.
Major	...	Johnson, F. E.	...	R. A.
Major	...	Johnstone, A. A. J.	...	5th Punjab Infantry.
Major	...	Johnstone, B. A.	...	1st Madras Pioneers.
Captain, D.S.O.	...	Jones, H. J.	...	14th Bengal Infantry.
Captain	...	Jordan, R. P.	...	Gloucestershire Regt.
Major	...	Justice, C. Le G.	...	13th Bengal Infantry.
Lt.-Col., D.S.O.	...	Keary, H. D'U.	...	31st Madras Infantry.
Major	...	Keate, C. R.	...	31st Madras Infantry.
Lieutenant	...	Keddie, H. W. G.	...	R. A.
Lt.-Colonel, D.S.O.		Keene, A.	..	R. A.
Major	...	Keir, J. L.	...	R. A.
Colonel	..	Kekewich, R. G.	...	North Lancashire Regt.
Col., C.B., A.-D.-C.		Kelly, J. G.	...	I. S. C.
Lt.-Colonel	...	Kemball, G. V.	...	R. A., W. African Front Force.
Lieutenant	...	Kennedy, W. M.	...	Asst. Commissioner.
Captain	...	Kennion, R. L.	...	Asst. Political Agent.
Major	...	Kenny, H. T.	...	Asst. Secy., M. Dept.
Captain	...	Kenrick, G. E. R.	...	Royal W. Surrey Regt.
Captain	...	King, A. B.	...	Royal Irish Regt.
Esquire	...	Kirk, H. A.	...	Dir. of Telegraphs.
Captain	...	Kirkpatrick, W.	...	1st Punjab Infantry.

ORDINARY MEMBERS.—(Contd.)

Rank.	Name.	Corps, &c.
Colonel ...	Kitchener, F. W. ...	West Yorkshire Regt.
Captain ...	Knapp, K. K. ...	R. A.
Lieutenant ...	Knox, A. F. W. ...	5th Punjab Infantry.
Lieutenant ...	Knox, C. S. ...	Gloucestershire Regt.
Major ...	Kreyer, F. A. C. ...	Cant. Magistrate.
Captain ...	Laing, F. C. ...	12th Bengal Infantry.
Lieutenant ...	Lambert, W. J. ...	2nd Lancers H. C.
Lieutenant ...	Lance, F. F. H. ...	19th Bengal Lancers.
Major ...	Langley, J. P. ...	R. A.
Lieutenant ...	Lash, A. O. ...	13th Bombay Infantry.
Captain ...	Lathbury, H. O. ...	R. E.
The Hon'ble, K.C.M.G.	Law, Sir E. F. ...	Member Viceregal Council.
Esquire, C.I.E. ...	Lawrence, W. R. ...	Pte. Secy. to H. E. the Viceroy.
Br.-Genl., C.B., D.S.O.	Leach, H. P. ...	Comdg. Presidency Dist.
Colonel ...	Leckie, F. W. V. ...	S. C.
Esquire ...	Lees, O. C. ...	P. W. Dept.
Col., Bart., C.B. ...	Leslie, Sir C. H. ...	I. S. Corps.
Major ...	Ley, W. G. ...	1st N. Staffordshire Regt
Captain ...	Lightfoot, T. W. ...	8th Bengal Infantry.
Captain ..	Lillingston, W. E. G. ...	2nd Lancers H. C.
Major ...	Lindesay, E. ...	2nd Royal Irish Regt.

ORDINARY MEMBERS—(Contd.)

Rank.		Name.		Corps, &c.
Captain	...	Lindsay, H. A. P.	...	D. A. Comsy. General.
Major	...	Little, C. B.	...	Somersetshire L. I.
Captain	...	Lloyd, W. E. E.	...	4th Infantry H. C.
Lt.-Colonel	...	Lomax S. H.	...	Scottish Rifles.
Major	...	Long, S. S.	...	Army Service Corps.
Esquire	...	Lorimer, J. G.	...	C. S.
Captain	...	London, J. A.	...	13th Madras Infantry.
Maj.-Genl., C.B., C.S.I.		Lovett, B.	...	Late R. E.
General, G. C. B.	...	Low, Sir R. C.	...	Comdg. the Forces Bo.
Captain	...	Lowis, P. S.	...	R. A.
Captain, M.B.	...	Luard, H. B.	...	I. M. S.
Captain	...	Lubbock, G.	...	R. E.
Major, D.S.O.	...	Lucas, F. G.	...	2-5th Gurkha Rifles.
Captain	...	Luck, C. A.	...	2nd Punjab Cavalry.
Lt. Genl., K.C.B.	...	Luck, Sir G.	...	Comdg. the Forces, B.
Colonel	...	Lugard, H. T.	...	R. A.
Major	...	Lumley, F. D.	...	Middlesex Regiment.
Major	...	Lumsden, H. R. W.	...	3rd Bengal Infantry.
Captain	...	Lyne, C. V. N.	...	16th Madras Infantry.
Captain	...	Lyon, J. W. H.	...	25th Madras Infantry.
Major	...	Lyster, A. W.	...	I. S. Corps.

ORDINARY MEMBERS.—(Contd.)

Rank.	Name.	Corps, &c.
Lt.-Colonel, M.D....	McCartie, C. J. ...	I. M. S.
Captain ...	McConaghey, H. ...	7th Bengal Lancers.
Major ...	McDermott, J. ...	2nd P. V. Rifles.
Major ...	McIntyre, H. D. ...	8th Madras Infantry.
Lieutenant ...	McNeile, D. H. ...	19th Bengal Lancers.
Lt.-Colonel, D.S.O.	McSwiney, E. F. H. ...	1st Lancers H. C.
Lieutenant ...	McVean, D. A. D. ...	45th Sikhs.
Captain ...	Macalpine-Leny, R. L....	16th Lancers.
Captain ...	Macandrew, H. J. M. ...	5th Bengal Cavalry.
Lieutenant ...	Macaulay, D. I. M. ...	1st Bengal Lancers.
Lt.-Colonel, C.B. ...	Macdonald, J. R. L. ...	R. E.
The Hon'ble, G.C.S.I.	MacDonnell, Sir A. P. ...	Lt.-Govr. N. W. P. and Oudh.
Br.-Genl, C.B., D.S.O.	MacGregor, C. R. ...	Comdg. Assam Dist.
Major ...	Mackenzie, C. J. ...	Seaforth Highs.
Captain ...	Mackenzie, R. J. H. L...	R. E.
Lt.-Colonel ...	Mackenzie-Kennedy, E.C.W	1st Madras Pioneers.
Captain ...	MacLachlan, T. R. ...	40th Pathans.
Captain ...	Maclean, A. H. ...	A. and S. Highlanders.
Captain, D.S.O. ...	MacMunn, G. F. ...	R. A.
Major, D.S.O. ...	Maconchy, E. W. S. K....	D. A. Q. M. Genl, I. B.
Captain, D.S.O. ...	Macquoid, C. E. E. F. K.	1st Lancers H. C.

ORDINARY MEMBERS—(Contd)

Rank.		Name.		Corps, &c.
Major	...	Macready, C. F. N.	...	Gordon Highlanders.
Lieutenant	...	Madden, T. E.	...	17th Bengal Infantry.
Major	...	Mahon, R. H.	...	R. A.
Lt.-Colonel	...	Maisey, F. C.	...	30th Punjab Infantry.
Maj.-General, C.B.		Maitland, P. J.	...	Secy. to Govt. M. D.
Captain	...	Major, F. F.	...	1st Infantry H C.
Captain	...	Mansel, H. A.	...	Dorsetshire Regt.
Lt.-Colonel	...	Mansfield, H.	...	Comy.-Genl. for Trans.
Major	...	Mardall, W. S.	...	17th Bengal Lancers.
Lieutenant	...	Marindin, A. H	...	1st Royal Highlanders.
Major	...	Marriott, E. F.	...	I. S. Corps.
Major-General	...	Marsh, F. H. B.	...	U. Sup. List.
Maj.-Genl., C.I.E...		Marshall, G. F. L.	...	Late R. E.
Captain	...	Marshall, T. E.	...	R. A.
Colonel	...	Martin, A. R.	...	I. S. C.
Lt.-Colonel	...	Martin, M.	...	R. E.
Captain	...	Massie, R. H.	...	R. A.
Lt.-Col., C.I.E., V.D.		Masson, D. P.	...	1st P. V. Rifles.
Major	...	Massy, G.	...	Norfolk Regiment.
Lt.-Colonel	...	Massy, H. S.	...	19th Bengal Lancers.
Lt.-Colonel	...	Masters, A.	...	A. A. General.

ORDINARY MEMBERS.—(Contd.)

Rank.		Name.		Corps, &c.
Captain	...	Maurice, F. B.	...	Derbyshire Regiment.
Lieutenant	...	Maxwell, D. W.	...	1-4th Gurkha Rifles.
Major	...	Maxwell, G. W.	...	A. A. General.
Captain	...	Maxwell, H. G.	...	16th Bengal Lancers.
Major	...	Maxwell, N.	...	R. A.
Lt.-Colonel	...	Maxwell, R. C.	...	R. E.
Major	...	Mayhew, H. S.	...	Border Regiment.
Major	...	Mayne, C. B.	...	R. E.
Colonel, C.B., A.D.C.		Mayne, R. C. G.	...	30th Bombay Infantry.
Lt.-Colonel	...	Meade, J. W. B.	...	3rd Lancers H. C.
Lt.-Colonel, C.I.E.	...	Meade, M. J.	...	Political Agent.
Captain	...	Mears, A.	...	I. S. Corps.
Captain	...	Medley, A. G.	...	D. A. A. General.
Major	...	Medley, E. J.	...	17th Bengal Lancers.
Maj.-Genl., K.C.B., C.M.G.		Meiklejohn, Sir W. H.	...	Comdg. Rohilkand Dist.
Lieutenant	...	Melliss, F. G.	...	13th Bombay Infantry.
Colonel, K.C.S.I.	...	Melliss, Sir H.	...	S. C.
Major, M. B.	...	Melville, C. H.	...	R. A. M. Corps.
Major	...	Melville, J. S.	...	2nd Bengal Infantry.
Captain	...	Mercer, W. H. W.	...	26th Madras Infantry.
Esquire	...	Meredith, A.	...	Deputy Commissioner.

ORDINARY MEMBERS—(Contd.)

Rank.	Name.	Corps, &c.
Captain ...	Miles, P. J. ...	4th Punjab Infantry.
Colonel, c.s.i. ...	Miley, J. A. ...	Acctt. Genl., M. Dept.
Captain ...	Millar, W. H. ...	46th Punjab Infantry.
Captain, D.S.O. ...	Moberly, F. J. ...	37th Bengal Infantry.
Major ...	Molesworth, H. C. ...	R. A.
Colonel ...	Monck-Mason, G. G. ...	R. A.
Major ...	Money, A. W. ...	R. A.
Colonel, c.B. ...	Money, E. A. ...	I. S. Corps.
Lt.-Colonel ...	Money, G. A. ...	18th Bengal Lancers.
Colonel ...	Money G. E. ...	A. A. General.
Captain ...	Money-Shewan, R. E. ...	R. E.
Lieutenant ...	Monreal, G. ...	Wiltshire Regiment.
Major ...	Montgomery, C. A. S. ...	1st Bombay Grenadiers.
Lt.-Colonel ...	Montgomery, J. A. L. ...	Commissioner.
Lt.-Colonel ...	Moore, G. H. J. ...	Bhopal Battalion.
Br.-Genl., c.B., D.S.O. ...	More-Molyneux, G. H. ...	Comdg. Aden Dist.
Captain ...	Morris, R. L. ...	3rd Bengal Cavalry.
Major ...	Morris, W. A. ...	R. A. M. C.
Lt.-Colonel ...	Morrison, R. H. ...	Late 18th Hussars.
Captain ...	Morton, E. R. ...	31st Punjab Infantry.
Maj.-Genl., K.C.I.E., c. B.	Morton, Sir G. de C. ...	Comdg. Lahore Dist.

ORDINARY MEMBERS—(Contd.)

Rank.	Name.	Corps, &c.
Captain ...	Moulton-Barrett, H. P...	2nd A. & S. Highs.
Major ...	Mullaly, H. ...	R. E.
Major ...	Mullins, W. B. ...	27th Punjab Infantry.
Colonel ...	Murray, J. W. ...	A. Q. M. Genl., I. B.
Major ...	Muspratt-Williams, C. A.	R. A.
Captain ...	Nairne, E. S. ...	R. A.
Lieutenant ...	Nagle, K. E. ...	3rd Infantry H. C.
Capt. the Hon'ble	Napier, H. D. ...	C. I. Horse.
Captain ...	Napier, G. S. F. ...	D. A. Q. M. Genl., I. B.
Lieutenant ...	Nash, W.G. ...	B. B. & C. I. Ry. V. Rifles.
Lt.-Colonel ...	Nedham, E. M. ...	Cant. Magistrate.
Captain ...	Nethersole, A. R. ...	27th Madras Infantry.
Captain ...	Nethersole, F. R. ...	Assistant Commissioner.
Br.-General ...	Neville, J. P. C. ...	Offg. D. A. General.
Major ...	Newell, W. J. ...	8th Bengal Infantry.
Lt.-Colonel ...	Newill, J. H. ...	Political Agent.
General ...	Nicholl, T. ...	Late R. A.
Captain ...	Nicholls, A. ...	2nd Punjab Infantry.
Captain ...	Nicholson, C. L. ...	Yorkshire Regiment.
Maj.-Genl., K. C. B.	Nicholson, Sir W. G. ...	Adj. Genl. in India.
Lt.-Genl., C.B. ...	Nicolson, M. H. ...	I. S. C.

ORDINARY MEMBERS.—(Contd.)

Rank.		Name.		Corps, &c.
Lieutenant	...	Nisbet, F. C.	...	Gloucestershire Regt.
Colonel	...	Nixon, J. E.	...	Asst. Qr. Mr. General.
Captain	...	Noblett, L. H.	...	Royal Irish Rifles.
Major	...	Norie, C. E. deM.	...	2-2nd Gurkha Rifles.
Captain	...	Norman, H. H.	...	Northamptonshire Regt.
Major	...	Norman, W. W.	...	2nd Punjab Cavalry.
H. E. the Right Hon'ble, G.C.S.I., G.C.I.E., C.B.		Northcote, H. S., Lord...		Governor of Bombay.
Lieutenant	...	Nuttall, J. R.	...	44th Gurkha Rifles.
Captain	...	O'Connor, W. F. T.	...	R. A.
Major	...	O'Donnell, G. B.	...	Asst. Pol. Agent.
Lt.-Colonel	...	O'Donoghue, M. E.	...	2nd Madras Infantry.
Esquire	...	O'Dwyer, M. F.	...	C. S.
Major	...	O'Leary, T. E.	...	Royal Irish Fusiliers.
Major	...	O'Neill, W. H.	...	R. A.
Lt.-Colonel	...	O'Sullivan, G. H. W.	...	R. E., A. A. General.
Captain	...	Ogg, G. S.	...	R. A.
Captain	...	Oldfield, C. G.	...	R. A.
Captain	...	Oldfield, T. A. F. R.	...	16th Madras Infantry.
Major	...	Ommanney, G. S.	...	1-1st Gurkha Rifles.
Major	...	Ormerod, G. S.	...	2nd Royal Muns. Fus.

ORDINARY MEMBERS.—(Contd.)

Rank.	Name.	Corps, &c.
Colonel, C.I.E. ...	Ottley, J. W. ...	R. E.
Lt.-Colonel ...	Ovens, G. H. ...	Border Regt.
Lt.-Colonel ...	Owen, R. ...	Late 21st Hussars.
Colonel ...	Paley, E. G. ...	Late 18th Hussars.
H. E. Genl., K.C.B.	Palmer, Sir A. P. ...	C-in-C. in India.
Lt.-Colonel ...	Parkinson, J. R. ...	Hampshire Regiment.
Major ...	Parsons, C. G. ...	I. S. C.
Esquire, C.I.E. ...	Patterson, A. B. ...	C. S.
Lt.-Colonel ...	Patterson, G. ...	Wyde Bay Mounted Infantry, Queensland Defence Forces.
Captain ...	Patterson, H. McN ...	5th Bengal Cavalry.
Major ...	Paul, E. T. ...	6th Bengal Cavalry.
Lt.-Col., D.S.O. ...	Payne, R. L. ...	Royal Inns. Fus.
Captain ...	Peach, E. ...	3rd Madras Infantry.
Esquire ...	Peacock, E. B. ...	I. C. Service.
Colonel, C.M.G. ...	Peacocke, W. ...	R. E, D. Q. M. General.
Lieutenant ...	Peart, C. L. ...	4th Sikhs.
Captain ...	Pemberton, W. A. ...	Naini Tal V. Rifles.
Lt.-Colonel ...	Pennington, R. L. A. ...	Late Northumberland Fus.
Br.-General ...	Penton, H. E. ...	Comdg. Nagpore Dist.
Captain ...	Perkins, J. C. C. ...	Mily. Accts. Dept.

ORDINARY MEMBERS.—(Contd.)

Rank.	Name.	Corps, &c.
Major, c. m. g. ...	Peyton, W. J. ...	7th Bombay Lancers.
Captain ...	Philipps, I. ...	1-5th Gurkha Rifles.
Lt.-Colonel ...	Phillipps, C. R. ...	19th Bombay Infantry.
Lieutenant ...	Phillips, R. S. ...	2nd Sikh Infantry.
Captain ...	Pickard, F. B. B. ...	1st Royal W. S. Regt.
Major ...	Pickard Cambridge, E. D.	Bedfordshire Regt.
Captain ...	Pierce, F. G. ...	9th Madras Infantry.
Lt.-Colonel ...	Piers, W. B. ...	3rd Bombay Infantry.
Captain ...	Pigou, F. H. ...	1st Infantry H. C.
Major ..	Pinney, R. J. ...	D. A. A. General.
Major ..	Pirie, C. P. W. ...	15th Bengal Lancers.
Captain ...	Playfair, A. ...	Asst. Commissioner.
Colonel ...	Plowden, F. H. ...	A. A. General.
Lt.-Colonel ...	Pollard, W. C. ...	15th Bengal Lancers.
Major ...	Pollock, F. G. ...	7th Bengal Lancers.
Lieutenant ...	Polwhele, A. C. ...	Nani Tal V. Rifles.
Lieutenant ...	Popham, E. L. ...	1st Madras Lancers.
Colonel ...	Porter, A. R. ...	28th Punjab Infantry.
Lt.-Colonel ...	Porter, H. E. ...	24th Madras Infantry.
Esquire ...	Potter, C. D. ...	Survey Department.
Major ...	Potts, F. ...	R. A.

ORDINARY MEMBERS.—(Contd.)

Rank.	Name.	Corps, &c.
Captain ...	Powell, A. L. ...	19th Hussars.
Captain ...	Powell, S. H. ...	R. E.
Captain ...	Powell, W. B. ...	9th Madras Infantry.
Captain ...	Prentis, W. S. ...	29th Madras Infantry.
Captain ...	Pressey, A. ...	4th Bengal Infantry.
Lt.-Colonel, D. S. O.	Preston, J. E. ...	S. Corps.
Esquire ...	Preston, S. ...	Punjab P. W. D.
Major ...	Prichard, G. P. M. ...	S. Corps.
Colonel ...	Prickett, T. ...	H. P.
Lt.-Colonel ...	Pringle, A. ...	I. S. Corps.
Lieutenant ...	Prissick, C. ...	2nd Sikhs.
Lieutenant ...	Pryce, H. E. ap R. ...	18th Bengal Infantry.
Colonel ...	Pulley, C. ...	1-3rd Gurkha Rifles.
Major ...	Purvis, A. B. ...	R. A.
Lt.-Colonel ...	Quentin, W. ...	4th Bombay Infantry.
Major ...	Radcliff, S. G. ...	33rd Madras Infantry.
Lt.-Colonel ...	Radcliffe, A. W. T. ...	14th Sikhs.
Lieutenant ...	Radice, A. H. ...	Gloucestershire Regt.
Major ...	Rainey-Robinson, R. M. ...	12th Madras Infantry.
Lt.-Colonel ...	Ramsay, J. G. ...	24th Punjab Infantry.
Major ...	Ramsden, H. F. S. ...	Mily. Accounts Dept.

ORDINARY MEMBERS.—(Contd.)

Rank.	Name.	Corps, &c.
Captain ...	Randolph, F. A. ...	R. A.
Lt.-Colonel ...	Ranken, G. P. ...	46th Punjab Infantry.
Colonel ...	Ranking, W. L. ...	U. Sup. List.
Major ...	Rawlins, G. W. ...	12th Bengal Cavalry.
Lieutenant ...	Rawson, R. I. ...	Gloucestershire Regt.
Captain ...	Redmond, W. J. H. ...	Rangoon V. Rifles.
Maj.-Genl., C.B. ...	Reid, A. J. F. ...	Comdg. 3rd Bde. China.
Esquire ...	Rendell, T. H. ...	Survey Department.
Captain ...	Rennick, F. ...	40th Pathans.
Captain ...	Reynolds, T. G. C. ...	2nd Royal Innis. Fus.
Captain ...	Ricketts, L. H. ...	12th Madras Infantry.
Colonel ...	Riddell, W. H. ...	A. A. General
Major ...	Rideout, F. C. W. ...	A. C. General.
Colonel, v.c. ...	Ridgeway, R. K. ...	I. S. Corps.
Captain ...	Rigby, G. C. ...	Wiltshire Regt.
Colonel, C.M.G. ...	Rind, A. T. S. A. ...	I. S. Corps.
Lt.-Colonel ...	Rippon, G. ...	29th Madras Infantry.
Esquire, C. I. E. ...	Risley, H. H. ...	C. S.
The Hon'ble, K.C.S.I.	Rivaz, Sir C. M. ...	Member of the Viceregal Council.
Captain ...	Roberts, H. L. ...	1st Bengal Lancers.
Surgn.-Lieut. ...	Robertson, A. W. ...	E. I. Ry. V. Rifles.

ORDINARY MEMBERS.—(Contd.)

Rank.	Name.	Corps, &c.
Esquire ...	Robertson, F. A. ...	C. Service.
Captain ...	Robertson, G. A. ...	D. A. Q. M. G., I. B.
Captain ...	Robertson, P. R. ...	1st Scottish Rifles.
Major, D.S.O. ...	Robertson, W. R. ...	3rd Dragoon Guards.
Lt.-Colonel ...	Robinson, G. H. ...	2-1st Gurkha Rifles.
Colonel ...	Rochfort, A. N. ...	R. A.
Major ...	Rodwell, E. H. ...	D. A. A. G. for Instn.
Major ...	Rogers, J. B. Leslie ...	Dehra Dun M. Rifles.
Lieutenant ...	Rolland, E. L. ...	9th Madras Infantry.
Captain ...	Roome, R. E. ...	6th Bombay Cavalry.
Captain, C.I.E. ...	Roos-Keppel, G. O. ...	Asst. Commissioner.
Major ...	Rose, H. ...	1-3rd Gurkha Rifles.
Colonel, D.S.O. ...	Rose, H. M. ...	27th Punjab Infantry.
Lieutenant ...	Rouse, A. H. T. ...	1st Madras Pioneers.
Lieutenant ...	Rouse, F. P. P. ...	1st Lancers H. C.
Major ...	Rouse, H. ...	R. A.
Colonel ...	Routh, W. R. ...	H. P.
Major, D.S.O. ...	Rowercroft, G. F. ...	15th Sikhs.
Captain ...	Rowley, F. G. M. ...	Middlesex Regt.
Lieutenant ...	Ruck, J. E. ...	Gloucestershire Regt.
Lieutenant ...	Rundall, A. M. ...	27th Punjab Infantry.

ORDINARY MEMBERS—(Contd.)

Rank.		Name.		Corps, &c.
Lt.-Colonel,	D.S.O.	Rundall, F. M.	...	1-4th Gurkha Rifles.
Lt.-Genl.,	G.C.B.,	Russell, Sir B. C.	...	Comdg. Southern Dist.
	K.C.M.G.			England.
Major	...	Rycroft, W. H.	...	11th Hussars.
Lieutenant	...	Salkeld, R. E.	...	2nd Oxfordshire L. I.
Major	...	Salvesen, C. E.	...	R. E.
Captain	...	Samson, L. L. R.	...	Lancashire Fus.
Lt.-Colonel	...	Sandbach, A. E.	...	R. E.
Captain	...	Sartorius, G. C. F.	...	19th Bombay Infantry.
Colonel	...	Saunders, M. W.	...	R. A., A. A. General.
Lieutenant	...	Sawyer, G. H.	...	23rd Punjab Pioneers.
Lt.-Colonel,	C.I.E.,	Scallion, R. I.	...	23rd Bombay Rifles.
	D.S.O.			
Colonel, C.B.	...	Scott, C. H.	...	R. A.
Lt.-Colonel	...	Scott, W. A.	...	Gordon Highlanders.
Lieutenant	...	Scott-Elliot, C. R.	...	4th Madras Pioneers.
Captain	...	Serasedickins, S. W.	...	2nd Highland L. Infy.
Captain	...	Searle, C. T. A.	...	36th Sikhs.
Captain	...	Selwyn, C. H.	...	Asst. Secy., M. Dept.
Captain	...	Senior, H. W. R.	...	20th Punjab Infantry.
Major	...	Sewell, J. H.	...	Retired.
Captain	...	Shadwell, L. J.	...	D. A. A. G. for Instrn.
Captain	...	Shakespear, L. W.	...	Assam Military Police.

ORDINARY MEMBERS—(Contd.)

Rank.	Name.	Corps, &c.
Lt.-Colonel ...	Shaw, G. J. ...	6th Madras Infantry.
Captain ...	Shea, J. S. M. ...	15th Bengal Lancers.
Lt.-Col., D.S.O., M.B.	Shearer, J. ...	I. M. S.
Major ...	Sherard, R. W. ...	5th Bombay Cavalry.
Captain ...	Sherwin, F. W. H. ...	Reserve List.
Captain ...	Sherwood, H. J. ...	R. E.
Major ...	Shore, O. B. S. F. ...	18th Bengal Lancers.
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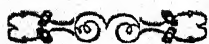
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The Journal

OF THE

United Service Institution of India.

VOL. XXX

JANUARY 1901

NO. 142

SOME TACTICAL CONSIDERATIONS ARISING FROM RECENT EVENTS IN SOUTH AFRICA.

By C. B.

The history of modern nations proves few things more unmistakeably than that disaster is a necessary discipline in order to produce a high state of military excellence.

The record of each great European power tells the same tale. Brandenburg trampled upon by the Empire produced Frederic the Great and his army which in turn went down before the youthful hosts of the Revolution, to rise again in the war of liberation and after years of patient work in peace to triumph at Sadowa, Metz, and Paris.

The military record of France shows the same tendency to alternate triumph with disaster, and so it has been with other nations; it would seem as if defeat alone could supply the great motive power required to train and organise an army in peace for victory in war, and harder task still, to develop and discover the leaders capable of directing the national effort at the crisis of fate.

If this theory applies also to us, we should feel extremely thankful, because our disasters have caused so little mischief and may be fruitful of so much good. Truly there is great excuse for the worthy people who believe that a special providence, as they call it, watches over their native land; but the gods help those who help themselves, and the longest run of luck has its turning point, whether good or bad.

It is the duty, none the less sacred because unpleasant, of the rising generation of British officers carefully to study the cause of our recent ill-successes, in order to prepare for a possible struggle with sterner, more powerful, and better informed enemies than the peasant soldiers of the two South African Republics. The materials for such a study are now within our reach; nor need we fear the

accusation of dictating from the safety of an Indian cantonment how battles should have been fought in South Africa. Such a taunt is applicable to all military criticisms, and a bird's-eye view is in such cases not unfrequently more correct than the vivid recollection of those who, having taken part in the strife, carry before their eyes with undue prominence the thrilling incident of the operations which they themselves happen to have witnessed.

Few campaigns have been so ruthlessly criticised as the British operations from October to February last, and none so generally without proper knowledge of the subject and the real bearing of events. Not only the unprofessional public but military opinion itself has been widely influenced by such criticism, and the danger exists of changes in our traditional methods of fighting which are not called for by recent events, and which will assuredly land us in greater errors if persisted upon in the teeth of a more dangerous foe and a more critical struggle.

Admitting at once that the result of the first three months of the war was disappointing, it is of importance to realise the actual situation which political events forced upon our troops and which no military precaution could have averted.

At the outbreak of hostilities our troops were at every point at a disadvantage numerically. • Whatever grouping of our slender forces had been adopted, the result would have been the same.

It has been declared that the decision to defend Ladysmith, the famous "entanglement" of Mr. Balfour's apology, was the cause of our troubles.

It is at least open to us to believe that the decision so to do saved South Africa, while the criticisms hurled at the leadership of the British army previous to its investment are generally without knowledge or value.

Sir G. White's army was opposed by superior forces acting on closely converging lines, and to have defeated them unaided, and in detail would have been a Napoleonic feat.

Some people think that if Sir Redvers Buller had adopted the line of operations through the Orange State, subsequently used by Lord Roberts, he would have easily accomplished his object and have avoided the worst of his troubles.

They fail, however, to explain how the British forces would have found it easier to win on the Modder than on the Tugela, nor how with insufficient numbers the long lines of communication through the Orange State could have been successfully guarded even if our forces had won a considerable tactical success to begin with.

The danger to British power in South Africa depended not on the extent of Boer territory, nor on the political importance of the Boer towns, but entirely on the existence of the Boer army. When Buller reached Cape Town, this army was concentrated between Ladysmith and the Tugela, having a formidable British force invested in its rear, and it was thus conveniently placed for us to destroy. The theatre of operations thus marked out was far from the seaports and railway junctions whose possession would have been of priceless

value to the foe, and, what is of hardly less importance in view of the eventual decision of the war, it was the nearest and most direct way to Johannesburg and Pretoria, the capture of which places was essential to our success.

For these reasons principally the British Commander-in-Chief did wisely in accepting Natal as his battle ground, nor did the enemy's fire sheltered by the boulders of that rugged district prove so destructive to his army as marching and counter-marching over the extensive prairies of the Orange State subsequently did to the numerous cavalry and strong divisions of Roberts' command. Marching great distances in a hostile waste country causes greater losses to an army than fighting. People who do not understand war find great difficulty in absorbing this fact in spite of the striking examples of it supplied by military history.

The above is a good example of the value due to most of the criticism showered upon the direction of the British forces. The difficulty of the country, the inadequacy of our weapons, the necessity of assuming the offensive, the folly of closing with an enemy when you do attack him and the necessity of manœuvring him out of his positions by widely turning movements, the danger of making night attacks, the superiority of the Boer riflemen mounted on ponies to ours who had to march on foot, and for some unexplained reason their superiority to our own cavalry who were armed not only to shoot but to charge also when opportunity occurred; these and many more reasons of equal value have been brought forward to account for our bad luck in those first three months of the war.

One and all they appear on examination to be beside the mark.

Sir Redvers Buller had every right to consider his army more than equal to the task before it, and the idea that in such a case the defensive attitude adopted by the Boers gives overwhelming advantage is not borne out by history. On the contrary, a skilful offensive always triumphs over an opponent who cannot follow up his defensive measures by the most vigorous counter-stroke.

To such a change of rôle the Boer troops proved quite unequal, and this cannot be wondered at considering the extemporary nature of their forces and organisation, and their long traditions in favour of a passive defence which trusted to the ignorance and unskilfulness of the enemy to ruin him.

This was perfectly easy to foresee, and was very properly counted upon by our leaders in deciding to fight in Natal. The failure of our first campaign was due not so much to faulty conception as to the unskilful way the operations were executed when once in presence of the enemy. And further the reason of this want of skill is to be sought not in the general plan of closing with the foe and destroying him, as in the manner in which our attacks were carried out, due to want of practical training in peace for such operations, to obsolete methods of troop leading and ill-concerted efforts which failed to make themselves felt at the same moment.

At a certain stage the assailant in any battle must lose more heavily than the defender. If the occasion is well chosen and the

effort successful and followed up by fresh forces, the defender pays dearly for his fleeting success. If, on the other hand, the position captured by heavy sacrifice of life proves to be dominated by other hostile positions, or if the attack be not properly supported, or if it fail at its inception, the triumph of the defender is in proportion to the heavier loss he has inflicted.

If you decide to attack, you must resolve to win. The cause of tactical reverses is to be looked for in tactical action, the training of the soldier, the knowledge of his officer, and the tactical perception of the superior leaders.

The very word tactics has a smack of the pedantic theorist to our ears ; but if for *tactics* you write *fighting*, the truth becomes more apparent and the subject less unpopular.

Before we decide that our troops cannot close with an adversary armed and trained on modern principles, that frontal and night attacks are impossible, that the only plan for turning an obstinate enemy out of his position is to march 10 miles round his flank, it will be as well to consider whether the measures condemned were properly taken, or whether the faults of execution were not so great that they never had a chance of success on their own merits.

Very different are the lessons drawn from the recent conflict by the chiefs of the continental armies, as their autumn manoeuvres have proved. It is certain that if we encounter any one of them, we must be prepared for the very tactics on the part of the adversary which some among us are declaring to be obsolete.

An army in the field is a delicate and complex machine. Its maximum effect is only produced by the combined action of the three arms guided by competent leaders and staff. The failure of any one of the four factors reacts upon the whole, and just as the more perfect machine in skilful hands accomplishes more than a rough one, and is more easily ruined by unskilful management, so a regular army is more easily defeated and its cohesion more thoroughly destroyed than irregular levies if the essential conditions of success just mentioned are absent. Most officers who have recently seen active service with comparatively large forces will agree that neither the academic training of our staff officers nor their regimental experience nor their official routine in peace adequately prepare them for campaigning on a large scale ; and the South African campaign from the size of the theatre of war as well as the strength of the forces engaged must be so described. Moreover, the executive staff included officers of such widely different experiences, of such widely diverging schools of thought, that on any conceivable military situation the greatest variety of opinions might be expected to exist. These circumstances favoured a want of mutual confidence and sympathy and militated against the harmony of thought and action which are essential to the leaders and staff of large forces in the field for successful enterprises.

So that, in spite of the talent and devotion of its members, it was probable from the outset that the staff of the army would not work very smoothly, and the publication of the Spion Kop despatches

proved such to be the case.

Foreign critics, who have had the chance of forming a sound opinion, have declared that the artillery is the best arm in our service. Much foolish criticism has been wasted on its inferior armament, but the facts seem to prove that we have good reason to be satisfied with its performances. It practically secured for our side a superiority of fire in each engagement, and where we fought unsuccessfully it covered the retirement of our troops and prevented the enemy from even attempting a serious counter-stroke.

The bringing up of fortress artillery by rail and its employment against us at Ladysmith should perhaps have been foreseen by our chiefs, but that is hardly a question of field artillery, and the hesitation to adopt a quick-firing piece for the re-armament of our army in 1899 must be considered a wise precaution on the part of the British military administration having regard to the experimental stage of existence reached by the new invention and the greater necessity for spending available money on other purposes at the time.

It seems that so far as artillery failed to afford the British troops the utmost possible help, it was from mistaken tactical practice and theory rather than from other causes.

Thus the preference for shrapnel over common shell and the absence of the latter from our limber boxes proved a grave error.

The lessons of the Franco-German War so often derided had simply not been studied carefully and practically enough.

When you can compel your adversary to expose his reserves in mass or column of route as the Germans did at Noisseville, or when you can coop up his forces in a narrow space, and search it with your fire as they did at St. Privat and Sedan, the artillery may hope to play the leading rôle and break down resistance with but slight help comparatively speaking from the other arms: but these are likely to be exceptional cases in the future.

Much more often the artillery will play the auxiliary rôle of facilitating and protecting the advance of the assailing infantry; but seldom will it be able to shell a resolute enemy out of his position as we expected to do at Colenso. Fire tactics are more important than smart manœuvring power on the field. The latter sometimes comes to disastrous grief, while a rapid accurate fire opened at moderate range from an unsuspected quarter never fails to create a good effect.

Such fire-surprises and other artifices of the sort invariably attempted at foreign manœuvres are never practised by us in peace, perhaps because the general situation at our manœuvres is not sufficiently realistic. Hence probably the limited application of them in the war and our consequent reputation for want of tactical resourcefulness.

During the first three months of the war the enemy made his superiority in mounted troops felt to the utmost, and indeed this cavalry superiority has been declared by more than one of the greatest conquerors in history to be the most important factor in winning battles.

Frederic, Napoleon, and Lee have left this opinion on record. Certainly the investment of Ladysmith by the Boers would speedily have been brought to an end had Buller's cavalry been able to raid the two lines of railway which connected the Boer camp with the Transvaal and Orange Free State respectively.

Both on the Tugela and Modder our cavalry was too weak to carry out its task, and it is therefore beside the point to discuss how its previous training and tactics would have fitted it to act if it had been present in sufficient strength.

It may, however, be noted that want of practice in peace and tactical ignorance among subordinate leaders reduced the patrolling to a very poor level, and this service was precisely that which its strength could have accomplished, while it was of vital importance to the success of our generals.

The caution laid down, too, in the regulations of continental armies against over-burdening divisional cavalry with precautionary measures and much riding to and fro was neglected, with the result foretold in these same regulations, *i.e.*, destruction of the fighting force of the troops in question by knocking up their horses.

The strength of cavalry is measured by the power and endurance of horses. Therefore this should not be overtaxed without urgent reason and unless the immediate future does not seem to require the service of the force of cavalry thus expended.

With a cavalry officer as commander-in-chief and with the spirit which now animates the whole of the cavalry in India, it is not unreasonable to hope that the next campaign may prove more glorious to the mounted arm than the one just concluding. Mobility, initiative, and tactical skill must for this purpose take the place of traditional slowness and methodicalness. Cavalry must be veritable handy men, prepared to adapt themselves to every situation, ground and circumstance, and to use any weapon in their reach, sword and lance or rifle and spade as the case dictates, to fight on horse or on foot as ground and opportunity offer, to see everything and to understand the meaning of what they see.

These are some of the lessons in cavalry tactics learnt in South Africa. They closely resemble the lessons taught by every important campaign in the century, but particularly the mighty struggle in America from 1861 to 1866 wherein the Southern Cavalry under its great chief played so glorious and decisive a rôle.

A Stuart is not easily found when he is wanted, but the lessons of history are common property within everyone's reach who is not blind-folded by prejudice and ingrained routine.

Our infantry had been taught that they had nothing to fear from cavalry and the contingency of large forces of mounted men prepared to fight with rifles on foot had not been foreseen. The bold action of the Boer horsemen came therefore as a disagreeable surprise which for a time paralysed our movements. Not that recent wars had not given examples of such action. The cavalry of the army of Northern Virginia, the Russians under Gourko in 1877, and the Boers themselves in 1881 had all given proofs of how much can be

effected by dismounted cavalry. The weakness of such a force particularly when unprovided with shock weapons, is that it cannot close with its adversary.

Even if successful, its losses would be so great that the success would scarcely repay the sacrifice.

The Boers but once attempted such an attack, the assault on Ladysmith, January 6th, 1900.

Their successes were mostly obtained by ambushing our troops or by awaiting their attack in what amounted to a long outpost line.

Any point of this line which we attacked was quickly reinforced with mounted men.

Of such a nature were the Boer positions on the Tugela and Modder.

Now the marching of our troops at the beginning of the war was bad from want of training, just as it became good in the later stages after sufficient practice, but however well infantry march, they cannot move quicker than mounted men, so that it was clear from the outset we must storm the enemy's positions in order to capture them. Both on the Modder and Tugela we fought a number of actions with this object and failed, at each point to penetrate the enemy's investing line.

The deduction that strong positions cannot be stormed except in conjunction with widely outflanking movements is not sound unless it be also known that the best means were taken in each case to execute these attacks. But in each failure of which we know anything authentically the faults of execution were amply sufficient to account for what happened.

It is more correct to deduce that had these mistakes not been made, Maggersfontein, Colenso, and Spion Kop would have achieved their purpose. Indeed, as regards the two latter actions, this opinion is officially expressed by Sir R. Buller himself. At Maggersfontein we attempted a night attack and a surprise: before the column had gone far it was evident that as a surprise it must fail. So badly had the ground over which we moved been reconnoitred that we were all unprepared for resistance where we met with it, although the common artifice of moving your outposts a little closer to the enemy to ward off a night attack is mentioned in every drill-book, including our own. No file of scouts preceded the column which was the clumsy old formation known as quarter column, the same which ruined the French Guards at Waterloo.

The other brigade instead of attacking simultaneously only reached the fight in time to prevent a hostile counter-stroke after our attack had failed.

It is scarcely reasonable to condemn night attacks, because a night attack so badly made did not succeed.

Night attacks will certainly be employed in the future by our enemies, and they will often be the best means of winning a battle, particularly if they do succeed in being a surprise.

Indeed the element of surprise is the best chance of success which any attack can have, whether by fire or shock, delivered by horse or foot.

It will rarely be accomplished by troops who move too slowly and methodically, nor by leaders whom the practice of responsibility and initiative has not impregnated with mutual confidence.

At Colenso the artillery preparation was not well executed. The infantry attacks were delivered on diverging lines and at distant points, at different times and in unsuitable formations.

No serious attempt was made to divert the enemy's attention from the real point of assault by seizing with infantry a fire position which really threatened him at another point.

Yet in the scheme of attack sketched in all our books this is an essential part of the plan.

At Spion Kop the leading was chaotic. The captured position was commanded by hostile batteries and its possession and gallant defence led to nothing.

On the other hand, had we persevered at any cost in closing with our enemies at either Colenso or Spion Kop even after our ill-success, it is more likely than not we should have overcome his resistance.

The shooting of our infantry was probably as good as the performances of their enemies, but volley firing often spoilt its effect and betrayed the whereabouts of our men, while the want of practice in individual firing and judging distance handicapped our troops at decisive ranges. Both sides probably had the same percentage of really good shots whose arm could be counted on to do mischief over $\frac{1}{2}$ a mile.

What we need to develop the aggressive power of our infantry is a systematic training of these men in stalking distant objects and in scouting.

No efforts should be spared to teach every man who carries a rifle to shoot straight up to 600 yards, and this can practically be done with the weapons we possess. Over that range it is waste of ammunition to employ any but crack shots except against a large target.

Fire tactics should be carefully taught to subordinate leaders, who should on all occasions be encouraged to use their judgment and cunning in employing the fire of their men in the most destructive and economical way, having regard to their supply of cartridges.

Our training hitherto right through the army has been a glorification of the parrot-like capacity for learning by rote as against the use of individual intelligence. Wherever one turns one meets with it. Take the advertisements of military books which offer to supply the answers to "catch questions" on all sorts of subjects from the training of a horse to the strength of an ammunition column. What in the name of common sense is the use of learning the answers to catch questions?

The result is absolutely mischievous as inculcating the plan of leaning on the memory instead of using the judgment. Not only can every contingency in war not be foreseen by text-books, but the memory is apt to break down in stress of circumstances just precisely when danger and difficulty sharpens the wits and raises the courage of a brave man, if he knows that he may rely on himself, and is not fettered to some stereotyped plan of action.

All this is so obvious that it seems waste of time to dwell on it but for the pernicious practice of our inspections and examinations which all tend in the same direction and whose fatal effects have made themselves felt on the characters and dispositions of our officers, particularly on the seniors who have been longest exposed to the system.

This was inevitable. It takes a strong original character to rise above such an atmosphere and such characters are not, as a rule, the favourites with their superiors of the opposite mould.

The result is that the majority of them leave the army without attaining high rank.

The unwise and obsolete organisation of our battalions tends to the same effect.

The battalion is no longer, as it was 60 years ago, the best tactical unit for one man to lead. The unit must be smaller, and the whole military world has agreed to fix it at 200 to 250 men.

The practice too of giving real power to leaders of companies has many other good results whose effects are incalculably great in war.

The company knows and trusts its Chief in a way 1,000 men can never know or trust their Colonel, even if the latter could possibly direct them all personally in action.

The command of a company, when, as on the continent, the authority is real, makes leaders.

Not only does it bring out the talents of the individuals by the exercise of them, but it enables superior authority to recognise merit which a man has no opportunity of displaying in our service until he is a Lieutenant-Colonel.

The knowledge that he is being watched and that he will be judged by results is a most powerful incentive to the company leaders to do their best. No measure of reform in its internal organisation could do more to improve the British Infantry than to make the company the real unit of command with 200 men under its Captain (or Major). We should then speedily see how superior the British officer is to his continental rival. We are always declaring that we believe him to be so, and yet in British regiments we refuse to trust him with a vestige of real authority. Things are rather better both in the Artillery and in the Indian Army.

It has been frequently stated that foreign troops would have had no better success than ourselves if they had the Boers to fight under the same conditions.

This may be true, and is impossible to disprove, but it may be worth while to institute a short comparison between the battle training of their infantry and ours.

The most highly trained infantry on the continent is unquestionably the French, and since it is not the most unlikely to cross bayonets with our own, their methods should have for us a special interest.

It is very remarkable how little their training has been studied by the British military authorities.

It is not to be expected that we can train our men in the same time as our neighbours, because a large percentage of our recruits are too young and too weak physically for real work. They have to go through a course of feeding up and physical training before their real preparation can be said to begin.

Possibly the wisdom of our statesmen will some day remedy this grave drawback, but in any case the work of recruits might be systematised more than it is at present, so as to get them in batches of a size suitable to the business of instructing them instead of the innumerable little squads which are to be seen in most barrack squares of men at every stage of training.

This is of more importance than it might appear at first sight if the time and energy of the instructors is to be made the most of.

The first point to which the energies of the French infantry recruit is directed is to marching.

The training is very progressive and cautious, but continues the whole three years he is in the service.

It is to this careful training as well as to the thoughtful study of such tactics that the present astonishing superiority of the French infantry over all others in marching power is to be attributed.

It is difficult to over-rate the advantage thus possessed in campaigning, particularly in a campaign which is likely to be decided by a few sharp strokes, such a campaign in fact as would take place if England were invaded.

Now what is the marching education of our infantry in comparison. It must be admitted to be very unsatisfactory.

Passing on to shooting which is of scarcely less importance.

The French authorities have recently awoke to the folly of trusting to unaimed fire in the crisis of battle. Great efforts are being made to improve the individual fire of their men and the capacity for directing it by their officers.

There is certainly no reason why we should shoot worse than them : indeed the cooler temperament of the Englishman should enable him to shoot better if given equal opportunities.

It is to be hoped that he will get such opportunities in the future.

Taking next the duties known abroad as "Service in the country" which include the services of protection and information, bivouacking, dispersing in cantonments, and re-assembling for the march as well as the individual man's daily life under service conditions, the French soldier is far more thoroughly and practically trained than ours. No pains are spared to awaken and use his intelligence and natural ingenuity. We suffer from a want of imagination which is a real stumbling block.

When the necessity for any particular work is before our eyes, we do it like men. When the case is merely preparation for a somewhat improbable contingency, as we have hitherto considered war

to be, our energy sinks to zero. We are unable to mentally place ourselves under the necessity of acting.

We prefer to judge our troops by their zeal in turning out clean, well dressed, and rigidly drilled.

In every French company 16 men are picked out as scouts. When the reserves join this number is increased to 32.

These men are not only trained to scout but to stalk. They are the best shots in the company and their mission is to penetrate as close to a hostile position as possible, shooting down and annoying the defenders, clearing away the look-out men and skirmishers, and thus opening the way for the company to deliver its assault under the most favourable circumstances.

We have nothing of the sort recognised, though the principle may be adopted on the initiative of a company commander here and there.

Such scouts with our battalions in South Africa would have saved us many lives.

No French body of infantry, however small, is launched on a separate mission without being accompanied by at least two or three cavalymen trained for the purpose when they are available, and the captains of companies are also mounted.

The smallest handful of mounted men properly handled would have saved us the humiliation of Nicholson's Nek.

In the execution of the attack the French count a great deal on the power of their new artillery to pave the way for their infantry. Perhaps they count too much on it.

There can, however, be no doubt that they leave nothing to chance in the way of practice and rehearsal.

In general principle their plan of attack is not widely different to what we find in our own drill-book, though more stress is laid on the capture of a fire position directly threatening the enemy and sometimes compelling the defender to attempt its recapture under most disadvantageous circumstances.

Of course the value of flank attacks are recognised, but frontal attack is not shirked when necessary either to hold the enemy in position while a flank attack is being developed or to wear him out by attrition.

Anyone, who has visited a considerable number of the battle fields of Europe whereon great armies have played the attacking and defending rôle, may have noticed that hardly any of these defensive positions have 2 miles of continuous strong front without a weak spot against which the assailant's reserves could have been collected without heavy loss for a supreme effort. Military history shows indeed that these spots were by no means always recognised by the attacking general, but when they were made the most of the assailant seldom failed to break through the defence.

To take some of the battle fields of the 1870 war as being the best known. The French positions at Spicheren and Worth were thus captured.

The Bois de la Garenne was the weak point of the defending line facing east at Sedan.

German strategists of repute have maintained that the French centre at Gravelotte could have been pierced through la Folie if the leader of their III Corps had been allowed to deliver his frontal assault as he requested leave to : and no one who has studied the ground can fail to agree with Honig that the Point de Jour could have been stormed by the German VII Corps from the Bois de Vaux.

The fact is very few positions are without their weak spot, and if they are attacked before the enemy has time strongly to entrench himself, there is always a good chance of beating him.

Malplaquet was one of the bloodiest of our victories, so that it is nothing new having to sacrifice life to win a great success.

The question to be decided before the sacrifice is made must be this : Will the victory repay the loss of life ?

It is on these principles that French infantry are trained for attack and infinite pains are devoted to the details of execution.

Any and every formation is adopted in order to close with the enemy as rapidly as possible while offering him the smallest possible target.

Perhaps the formation most frequently used in bringing up supports is a shallow column on a front of four which twists about easily in the folds of the ground when they exist.

So soon as the scouts are checked a firing line of one man to the pace is formed and maintained.

There is no longer any good reason for extension if the attack is to be pressed.

When once troops are shooting at one another in the open, it is best to have as many rifles in action as can be used with good effect.

No doubt it will be said there is nothing in all this which is new to the leaders of our infantry.

The answer is that there is all the difference in the world in the execution of the attack by the two armies.

British infantry remind one of a rhinoceros tramping through the jungle : Frenchmen of a tiger stalking its prey.

The comparative inertness and inelasticity of our troops are due to want of practical rehearsal, bad organisation of tactical units, want of the practice of authority among the junior leaders, want of cunning and field instinct among the men, devotion to stereotyped formations and consequent sense of unreality in the preparation for the most difficult as well as the most important work which has to be done by armed men.

It should not be forgotten that the most glorious successes of our infantry under Wellington in Spain were gained not only by superior tactical formations and leadership, but very much by the more perfect training of our men over their adversaries who for the most part lacked any peace training or knowledge which they had not acquired campaigning.

In the training of the soldier manœuvring must be distinguished from drill, the former is rehearsal of fighting itself, the latter more detailed and methodical instruction. At present no one knows where the one begins and the other ends.

An enemy is but seldom simulated in our field days.

Battle training so far as it does take place at all is generally in the higher units, whereas it is on the company and its leader that the fate of a fire action depends.

To theorise over the difficulty and danger of offensive tactics is entirely useless.

It still remains true that to *make* war is to attack, to defend oneself is merely to suffer war, and offensive strategy requires offensive tactics.

To bring offensive operations to successful conclusion certainly requires a higher state of peace training than a defensive attitude, but the latter can never conquer an enemy.

Precisely that form of attack succeeds best which is least expected ; hence even the rush of mounted squadrons may still inflict a decisive blow in a future battle against a foe who has the settled belief that such a form of attack is impossible and therefore does not look out for it.

But the attacking cavalry must be masters of the horses and weapons. Speed—not method—must be their motto, and their leaders must understand the tactics of the other arms.

"Diminishing and Increasing the Front," the well beloved drill of our cavalry for some years past, will never influence the fate of a fight.

The tactics of cavalry will not greatly differ from those of infantry.

It will be the rifle both in scouting and fighting that will be most often used to open the way : but the effect of shock action at the right moment and in the right place should never be forgotten.

Cavalry, whether on horse or foot, must make themselves speedily felt, and except on rare occasions cannot afford great numerical losses, particularly of horse flesh.

Infantry remains the slower arm which can wait to win by obstinacy and perseverance what the cavalry can only seize by rapid action and sudden attack.

14 SOME TACTICAL CONSIDERATIONS ARISING FROM RECENT
EVENTS IN SOUTH AFRICA.

Both arms require the intelligent co-operation of the individual soldier and the subordinate leader to produce great results.

The discipline should be that of a pack of hounds rather than that of ship's company.

That the most has never been produced by the present system of training of the British soldier can hardly be denied, and great will be the reward of some future chief who having developed to the utmost his innate warlike qualities is privileged to use the weapon thus tempered in his country's defence.

THE USE OF LIGHT RAILWAYS (2-FOOT 6-INCH GAUGE) IN INDIAN WARFARE, AND THE ORGANISATION AND WORKING OF RAILWAY CORPS.

BY LIEUTENANT-COLONEL J. A. FERRIER, D.S.O., R.E.

Motto : "Le Mieux est l'ennemi du Bien."

Before discussing the use of light railways in Indian warfare it is well to have a clear conception what the light 2-foot 6-inch gauge railways in India are likely to be.

Type of line.

The type may be taken to be in general terms as follows:—

Road of 35 to 40½ lbs. per yard, steel rails on steel or wooden sleepers, 4 feet to 4 feet 6 inches long, according to circumstances.

The steel sleeper has not, invariably, given good results, and, therefore, for permanent lines its adoption depends largely on local conditions and its cost and life as compared with a wooden sleeper.

Sleepers.

The 4-foot 6-inch wooden sleeper has the advantage of being just half the length of the market standard gauge sleeper, but there its merit ceases. The market sleeper is much too large in section, and wooden sleepers on lines likely to be included within the zone of military operations suffer from the disadvantage that they can be burned by either friend* or foe.

The latest pattern of Indian 2-foot 6-inch gauge engine will take

Engines.

a load of 100 tons up an incline of about 2 per cent.; this is exclusive of the weight of engine and tender and rolling-stock. A similar engine, made in Germany, will take a load of 75 tons up an incline of 7 per cent. at a speed of 12 miles an hour, and 169 tons up an incline of 3½ per cent.

In the future, therefore, we may safely rely on trains of 150 tons useful load traversing our frontier lines on grades of 3 to 3½ per cent.

Taking a working day of twelve hours, and trains running at one-hour intervals, we can count on 1,800

Capacity of line.

tons per diem at a terminal station, provided the traffic be confined to stores and that there be ample rolling-stock, and, above all, siding accommodation, so that trains can be emptied at once and sent back.

* Stolen for firewood.

A division of all arms of the Indian Army requires, according to a liberal estimate, an average of 165 tons per diem of food, forage for all animals, military and transport, and ammunition, including waste of rounds expended by infantry.

Thus a thoroughly efficient line working up to full power on a single rail could furnish 11 days' supplies every day for a division of all arms, or 5 days' supplies for two divisions and corps troops.

Suppose half the number of trains to be troop trains, half the above amounts could be furnished.

We have thus an easy basis of calculation for our rate of supply.

Cavalry and artillery would move, as a rule, by road; infantry by rail. But the rolling-stock of the latest pattern is quite capable of carrying cavalry and artillery horses in cattle trucks, and wheeled artillery, even including siege train, can be loaded bodily on to open trucks by end or side loading, without the carriages being dismounted,

For locomotives and rolling-stock we have only to turn to the Existing supply of rolling-stock. Bersi Light Railway and Eastern Bengal 2-foot 6-inch gauge line, and where these do not actually meet our requirements for military purposes they can be modified.

As a principle, I would advance the desirability of all rolling-stock, at any rate, goods trucks, being built entirely of steel as a precaution against Modifications for war purposes. fire, and because, with the addition of very light plating, they can be converted into bullet-proof carriages. Passenger coaches would, as a rule, be used for hospital purposes, and these on emergency would be supplemented by covered goods wagons, supplied with special slings for carrying stretchers.

Perhaps it is too much to expect the coaches to be all built of steel, but it is thought that carriages might be designed with steel frames and panels capable of being provided with steel shutters in time of war. The military department would do well to provide a certain number of hospital carriages of special design—say, enough to accommodate 100 wounded, as no railway would have enough of these for war purposes. They might be distributed amongst the breakdown stock of two or three lines, and called up on to the line of advance on mobilization.

The engines should have deep cabs of steel provided with folding or sliding steel side shutters to protect the engine driver and fireman.

The above precautions are recommended merely for protection, more especially of the sick and wounded and their medical attendants.

At the moment we are engaged in a war in South Africa in which Armoured trains. armoured trains are being used to an unprecedented extent. It is, perhaps, premature to generalize on the subject before the campaign is concluded, but in case favourable opportunities do arise for the use of armoured trains, it is well to discuss their weak points and the precautions to be taken in erecting them. First and foremost, against creditable artillery armoured trains are useless. Although nearly all

modern artillery use shrapnel shell to the exclusion of other, as a rule, it must be remembered that these can be used with percussion fuzes, and that high-explosive shells or mine shells are being daily improved. Again, a train may run the gauntlet of the enemy several times with impunity, and do useful work; but against a skilful enemy that can use artillery a day of reckoning is sure to come. There is such a fascinating resemblance between an armoured train and an ironclad ship that the idea catches on at once, and is greeted with enthusiasm. It should, however, not be forgotten that, unlike a ship, the train is unable to alter its course, so that one source of error in the opposing artillery fire is eliminated. A splintered wheel may immobilize the whole contrivance, and on a curly line an unfastened rail may escape the look-out man, and may check the train at the point where the enemy has trained his guns beforehand, *e.g.*, the armoured train returning to Estcourt on Wednesday, November 15th, 1899.

With these preliminary remarks I proceed to the constitution of the train.

Weak points.

The weak points to be protected are—

1. The wheels of all vehicles, the engine motion, and smoke box. Any of these can be damaged or perforated, as the case may be, by musketry fire.
2. The funnel, boiler, and safety valve, steam pipes, and water feed.

The train should, therefore, be marshalled with the engine in the middle. In front of it should be a high armoured, loop-holed truck carrying the gun or guns. The engine itself should be a side tank engine, as the side tanks when full of water afford enormous protection to the boiler, steam pipes, etc., which can be arranged to pass between the side tanks and the boiler.

The boiler and steam dome are sufficiently thick to keep out anything but shells.

But the wheels, pistons, side rods, and cylinders should be protected by skirts to keep out all bullets. The truck wheels should be similarly protected. Behind the engine should come a tender with coal and water, and then another high armoured truck, or, perhaps, two. This would be about as much as one engine could manage.

I am in favour of at least two armoured trains working together

Method of working.

separated by an interval of about 2,000 yards or more according to circumstances.

ces.

Operations should not, under ordinary circumstances, be undertaken beyond the zone of the cavalry scouts, and the line should be covered from turning movements in rear of the second train. Armoured trains thus worked as a supporting main body to troops

in the open can become a really important auxiliary in warfare against an enemy with no or only indifferent artillery. We have an example of this in the action on Tuesday, 24th October, outside Kimberley, under Major Scott-Turner. On the other hand, we have instances of failure, such as that already quoted on 15th November 1899, and the opening incident of the campaign on October 12th, 1899, when Captain Nisbett and his men were taken prisoners. The operations of the 17th of the same month at Spyfontein, when the train ran the gauntlet of 13 shells badly aimed, can only be characterized as being extremely lucky.

It is not necessary to mention here the exceptional circumstances under which a desperate venture may have to be made. A train under these circumstances would not be a fighting machine strictly speaking, and should have only enough men in it to work the engine and keep up a running fire. If the enemy is before it and cuts the line, it must run back. If the enemy gets behind it as well, the train is lost, and the best thing to do is for the garrison to withdraw quietly by ones and twos, leaving a fuzed charge to blow up the train and its valuable contents. A few men will, no doubt, succeed in getting off in the confusion arising from the explosion.

It is hoped that ere long we shall see all the summer stations of troops connected with the main line by extension of the feeder railway system. 2-foot 6-inch gauge light railways. It is not absolutely necessary that these lines be traversable throughout by an enginehailed train. There are elevated and awkward positions, where the necessary length could not be got for the grade without unduly exposing the line. In such cases they could be served by funicular inclines, worked by hoisting engines, or by counterpoise arrangement. This latter is not always easy to provide unless there be an abundant water-supply available.

Similar lines, it is conjectured, will stretch out in the direction of all our feelers on the frontier, such as Lundi Kotal, Kohat, Bannu, or even Kurram and Tochi, not to mention similarly situated strategical points on our northern, north-eastern, and eastern frontiers. All will be provided with the same type of rolling-stock, and, if possible, with the same type of permanent-way, so that the extension of one or more lines with the spare plant of the others may be carried out without confusion.

All lines would be provided with a supply of transportation cars, so that when the necessity arises the trucks of the standard gauge may be carried bodily over the narrow gauge line without break of bulk. I am not sure if railway men in India view this process with favour; if they do not, it can only be because it is not sufficiently practised. On the Continent of Europe, where there are several narrow-gauge lines communicating from trunk line to trunk line, transportation

cars are in daily use, and may be seen traversing the tram lines of populous cities. On some of the agricultural feeder lines such perishable goods as green vegetables, fruit, etc., are packed straight on to the trunk line trucks as they stand on the transportation cars, and are so conveyed to their destination without break of bulk.

Men would like to avoid break of bulk

Break of bulk.

if they could, and I have even heard some state that unless the standard gauge can be carried on entire, it is no use constructing a railway at all.

But to the military man break of bulk does not produce the same inconvenience as to his civil *confrère*, whose ideas are limited by rapid transit and quick returns, with low maintenance charges and working expenses. The stores, as they are loaded hurriedly at the base, cannot possibly be sent up to the front without being sorted first, and so it is a positive advantage to have a break of bulk before the actual theatre of war is entered.

Let us view the standard gauge line as if it were the sea conveying a number of ships loaded with military stores to the port of disembarkation, *viz.*, the point where the 2-foot 6³/₄-inch gauge light line branches off towards the theatre of war. As a port of disembarkation has many piers or quays at which to unload ships and barges, so the junction should have many sidings and platforms, and these sidings will all be laid down with a 2-foot 6-inch gauge line alongside the standard gauge rails, and at such a distance from them that the gap between can be bridged by the flaps of two adjacent high-sided trucks resting on temporary trestles. The stores can then be sorted and loaded at the same time, *i.e.*, the lot to go on at once can be transferred direct to the narrow gauge trucks, those to be delayed can be shot out on the other side on to the platform. Covered goods wagons and low-sided trucks can be connected by temporary plank gangways. I have not lost sight of difference in level. This must be compensated for by laying the narrow gauge line higher than the standard gauge one. One special siding for loading on to transportation cars will suffice.

Another method of laying the sidings is to have unloading platforms, with the standard gauge on one side and the narrow gauge on the other, as is the case on the Madras railway system at the stations where the standard and narrow gauge rails meet.

The late Colonel Home, R.E., says in his essay (*Journal of the R.U.S.I.*, Vol. XIX) on the Organization of the Communications of an

Transfer station.

Army including railways: "Railways must be viewed in two distinct lights":—

1st.—As a means for concentrating armies from distant points, and for placing them in the theatre of war.

2nd.—As a means for supplying those armies while operating on the theatre of war.

This division is really that between railways actually in the zone of military operations and outside it. In the former case the military element predominates ; in the latter, the civil.

It is manifest there must be a line of demarkation between the two.

This the Germans term the " Transfer Station."

Under the 1st category come the standard gauge trunk line and the 2-foot 6-inch gauge feeder line up to such a point on the line of communications as has been fixed on by superior military authority as the most advanced depôt secure against the enterprise of the enemy.

This point is the " Transfer Station."

Any place beyond it for the purposes of the railway is in the theatre of war, and comes under the 2nd category.

Under ordinary circumstances the existing system under civil

Civil administration not to be administration of the whole line up to and including the station yard at the Transfer Station would not be interfered with.

Beyond the Transfer Station all railway lines should be under military administration, and there should be a clearly defined limit where civil power ceases and military power commences.

The military railway should have its separate engines driven by
 Military system. military engine drivers and its separate
 brake vans, breakdown vans, travelling
 cranes, hospital cars, construction appliances and tools, and plate-
 layers' and other trolleys taken over for the time being, and only the
 loaded trucks and carriages of the main line should be passed on for
 conveyance over the military line. The civil traffic manager would
 keep a check on all rolling-stock passing beyond his control, and
 would receive receipts from the military traffic manager for the
 same and *vice versa*.

It is impossible to lay down general rules for fixing the position
 Determining position of Trans- of the " Transfer Station." The circum-
 fer Station. stances of each case must decide. For
 instance, it is understood that the Cape railway system passed under
 military control at Cape Town, the local conditions having proved
 such a step to be necessary.

It is highly improbable that the Transfer Station will have been
 Station yard arrangements. sufficiently prepared in peace time, and
 so the first care of the Director of Rail-
 ways will be to provide the necessary extensions and sidings serving
 the various camps and depôts. These need not all be served by
 engine power. The light field railway, to be described hereafter,
 may be found sufficient to provide some of the arteries for distribut-
 ing and collecting stores, and being of the same gauge as the perma-
 nent line, the trucks can be run over it by hand or by animal power.

One most important measure he must not neglect is to multiply the coaling and watering stations all along the part of the line that is open to the enemy's enterprise, so that if one or more important supply stations be cut off, he can still fall back on his intermediate supply depôts.

Where immediate extension of the line is possible, it is to be presumed that a stock of permanent-way will have been collected either at rail-head or at some convenient depôt. This will have to be supplemented later on by material coming from the rear, perhaps from some other line of railway, or possibly even from a seaport.

If from some other line of railway, it may prove advantageous to make up one or two material trains of narrow gauge and run them bodily onto broad gauge trucks for conveyance to the line of advance. In this way the material rolling-stock will be supplemented without delay. Once the necessary number of material trucks has been collected, the permanent-way will be conveyed by the broad gauge line in the ordinary way, and be transferred to the narrow gauge trucks at the junction like any other goods.

It is unnecessary here to dwell on the best system of pushing forward a railway under military conditions. Suffice to say, broadly, that some delay must necessarily arise at the outset while the road bed is being surveyed and picketed out ahead. But during this time the light field railway will have been pushed on ahead over some sort of track, and will be able to convey supplies to the front, both for the field army and for the formation of advanced railway camps occupied by the railway corps engaged in the alignment. It is possible also

Road motors to assist. that some assistance may be afforded by traction engine trains, as in the Uganda Railway, or even by automobile wagons conveying stores; but the use of these auxiliaries depends so much on the nature of the country to be traversed that they are merely mentioned here as possibilities under circumstances favourable to their application, such, for instance, as may be met with in grass countries or open sandy deserts.

The type of permanent-way for permanent lines is settled by the Government, and may vary for different lines according to their date of construction; the improvements made in manufacture are the result of experience and the local conditions, so that in making the following suggestions I wish it to be clearly understood that I am only recommending a general type of what I consider to be most convenient material for laying rapidly on a military line.

Of course it would be a great advantage if all the permanent-way were of the same pattern, like it used to be in the metre gauge line, with its 41½-lb. rails and 6-foot sleepers. But these had eventually to march with the times, and 50-lb. rails have driven the lighter type from the field.

Rails should weigh 35 lbs. to the yard, and be flat-footed, Vignoles pattern, arranged in pairs one shorter than the other, by the amount requisite for the sharpest curve on the road. On the straight the long rails will, of course, be laid in pairs, alternating with the short rails. As these are liable to be mixed up in transshipment, the order to the supplying firm should specify that a distinguishing mark be put on the short rails. A dab of white paint on the flange near the fish-bolt holes would suffice. In this position it would not be rubbed out. It might be objected that the arrangement of these rails will cause delay, but in practice it will be found not to be the case, as compared with arranging the ordinary market lengths, to get the joints level in going round curves, or, worse still, cutting the rails and boring new fish-bolt holes. A suitable length for the longer rails is 24 feet. A proportion of 21—18 and 15-foot lengths will always come in handy in putting in sidings; but these should be kept separate.

The standard points and crossings should be of the same length as standard lengths of rail, e.g., 18 feet or 15 feet.

Wooden, uncreosoted for choice, deodar if possible, 4' 6" x 8" x 4" is large enough, adzed to cant, and used without bearing plates.

If steel sleepers must be used, they should be as flat as possible, or slightly corrugated to minimize packing. The claws or chairs must naturally be so made as to admit of loosening the gauge at curves by wedging up on the inside for instance, or by some similar device.

The staff laid down in the *Rules and Regulations for the Working of Railways in War in Foreign*

Military railway staff.

Countries,	120	, issued by the War
	Gen. No.	
	3405	
	3501	

Office in England, for the efficient working of 50 miles of line is—

A Director of Railways, assisted by the following officers:—

- (a) Assistant Director of Railways.
- (b) Traffic Manager.
- (c) Locomotive Superintendent.
- (d) Superintendent of Works.
- (e) Paymaster.
- (f) Storekeeper or Quartermaster.

(g) Adjutant or other staff officer, to look after any railway corps that might be formed, or any companies of Royal Engineers that might be employed either in the construction, maintenance, or working of the railway.

This excellent little pamphlet goes so comprehensively into the subject under the headings of—

I. Organization,

II. Transport,

III. Duties of railway staff officers,

that it would be needlessly going over already well-trodden ground to mention here anything but the modifications requisite to adapt it to the working of a railway system in Indian wars.

To quote the pamphlet again—

“Railway management is a science of itself, and requires great experience for its efficient performance. So long as a railway is worked to the satisfaction of the general officer commanding, it is not desirable to interfere with the management. The military staff appointed to control, or in some instances even to direct the traffic, must seek in all ways to secure the goodwill and cordial co-operation of the local civil management . . .”

“In all wars an officer will be selected for the position of ‘Director of Railways,’ who will carry on his duties under the orders of the General Officer Commanding Line of Communications. It is by no means necessary that this Director of Railways should belong to the Regular Army.”

In a country like India, which is held by the sword, it is so necessary that military considerations should be paramount where active operations are concerned, it is desirable that the Director of Railways, if not a regular officer, should be a volunteer officer, or at least gazetted as amenable to military law during the term of his office.

For extensive operations the number of officers would be increased by Deputy Assistant Directors of Railways according to requirements. Similarly, the remaining heads of departments would have their deputies and assistants according to the requirements of the case.

The subordinate staff, *e.g.*, traffic superintendents, station masters, etc., are already dealt with in the pamphlet.

Similarly, the Locomotive Superintendent would, besides his deputy and assistants, if required, appoint running shed foremen, foremen of shops, leading hands, carriage departmental staff, etc.

And the storekeeper would have assistants and subordinates wherever depôts are established. The superintendent of works would, as a rule, have many assistants amongst the officers of the sapper companies and railway corps employed on the line.

I would add to the above list a medical officer, who should also be sanitary adviser to the Director of Railways, and make it his special care that the stations along the line are kept in a healthy condition, and, above all, provided with good and ample water-supply, not only for the railway staff, but for the troops and animals passing through.

It would be for the General Officer Commanding Lines of Communications to determine the point where the authority of the Director of

Railways would come into force. The cases in which he would have sway over the standard gauge trunk line it is hoped would be rare. As a rule, it may be accepted that his functions would begin at the Transfer Station, and it would not be desirable to advance this point even though the country be pacified during the course of the campaign.

We have now done with the permanent 2-foot 6-inch gauge line.

LIGHT FIELD RAILWAYS.

Nearly all Continental military powers have adopted light field railways for campaigning purposes, without which, according to many undisputed authorities on modern war, no extensive operations with the forces now required to conduct a successful campaign could possibly be carried on.

Various gauges and weights of rail and types of rolling-stock have been designed and accepted partially, and in some cases finally, by the Powers concerned. With us the gauge is determined to suit our feeder or strategical lines, *viz.*, 2-foot 6-inch. So far as I am aware, the type of permanent-way and patterns of rolling-stock have not been determined, but with the gauge fixed it is not a very difficult matter to forecast approximately the general form of the plant in its entirety.

The conditions to be fulfilled are—

Made up in bays already fixed to sleepers. Rails of the minimum weight, to stand continuous traffic for a short time. Sleepers sufficiently long to ensure stability at low speeds, with enough stiffness to preserve the gauge, and enough bearing area to support traffic even in light soil without the necessity for packing. Joints that can be made and unmade without use of special tools. The bays to be as long as possible, consistent with, not exceeding, a weight that can be easily handled by two men.

Rolling-stock capable of carrying loads up to 3½ or, perhaps, 4 tons on double bogie wagons; weight per axle not to exceed 1½ ton. The main element would, as a rule, consist of 4 wheeled bogies with rounded ends, and hook and eye couplings, and without buffers, capable of being connected by platforms for conversion into double bogie wagons, or for the formation of the following carriages with special bodies:—

- (a) Passenger car with canvas roof and sides.
- (b) Hospital car similar to above, but with two tiers for slinging hammocks or stretchers.
- (c) Ammunition wagons.
- (d) Transportation car for transporting standard gauge trucks bodily when necessary for short distances, when working at the end of a standard gauge line.

Wheels, 1 foot 6 inches to 1 foot 8 inches diameter, with safety catches as used on the Austrian siege railway to prevent back running.

Wheel base, 2-foot 6 inches to 2-foot 9 inches.

The passenger cars would have spring seats, and the hospital cars spring beds or stretchers hung on springs on the lower tier, and hammocks slung on the upper tier. Length over all some 18 or 20 feet, *i.e.*, enough to carry 4 men in two tiers lengthways.

By horses, mules, bullocks, camels, or coolies, according to conditions of particular cases. It is, perhaps,

Haulage.

unnecessary to remind my readers that the ratio of traction on rails to traction on a good and a bad road is respectively $\frac{1}{2}$ and $\frac{1}{16}$ nearly. So that the advantage of a field tramway as above roughly described is at once apparent—in theory.

Many and exhaustive experiments have been made in Germany and Austria in such light military lines,

Experiments on Continent of Europe.

and it has been proved that grades up to $\frac{1}{10}$ for short distances can be tackled by single bogie trucks fully loaded with one strong horse or two weak ones. So far no satisfactory motor has been devised to replace animal

Motors discussed.

or man traction on these light lines, but it may be expected that we shall hear in the near future of one of the Benzine or (Serpellet) steam motors being adapted to this purpose. It must be remembered, however, that traction depends on adhesion, and adhesion on weight per axle, the last being limited by the weight of the rail and number of sleepers, so that seeing our first condition is to have a light road and low weights on our axles, we must not be too sanguine in our expectations of an efficient motor.

Conditions desirable.

These have regard to (a) the rail track; (b) the rolling-stock.

(a) That the track be susceptible to taking the permanent 2-foot 6-inch gauge rolling-stock after it has been strengthened by the insertion of extra sleepers and packing, or even ballasting.

(b) That this be capable of being run over the permanent 2-foot 6-inch gauge line in regular trains drawn by locomotives.

I have purposely shown these conditions as desirable, for I do not consider them indispensable, and I think it would be a pity to insist on (a), at the expense of a light, flexible, and handy line that can be easily replaced, as will be shown hereafter, by one of more solid construction. Under any circumstances locomotives could never be admitted with safety on the field line. As regards (b), it is believed that the rolling-stock already in the market would fulfil this condition at low speeds, and it might even be tacked on to the permanent line rolling-stock if towed behind and provided with a special coupling to the last truck, for hitching on a brake van. But for covering long distances it would probably be much safer to run the field trucks bodily on to the permanent line trucks on their own rails, and scratch

them firmly. Then they could be run at full speed to destination, and run off again down a ramp.

Whatever be the system of track adopted—be it Decauville, Haarman, Dolberg, or any other of the numerous types in the market, or a combination of the best elements of all of them, including rolling-stock, etc.—a field railway of some sort will be an indispensable factor in our next big campaign.

I will now describe what I conceive to be the functions of the light field railway.

Immediately on receipt of orders for mobilization the light field railway is pushed on from the mobilization sidings at rail-head of the permanent line towards the first camp on the line of advance. As soon as opposition has been overcome the line will be pushed on as far as, perhaps, 20 miles beyond permanent rail-head, along existing roads and tracks wherever the country is easiest. This would take from 24 to 36 hours for the first 10 miles, and probably from 2 to 5 days for the 2nd 10 miles, according to the nature of the country and obstacles, material and military, encountered. This will have been done by sappers and pioneers and any portion of the Railway Construction Corps immediately available.

Meanwhile the Railway Construction Corps will have been assembled in full strength, and will have begun the 2-foot 6-inch gauge permanent line, either as an extension of an existing line or as an offshoot from a standard gauge line, alongside the field railway. As soon as a workable length has been laid down—say 8 to 10 miles—the field railway for that length will be ripped up and transported on its own trucks, either for a further advance or rolled back to the base for use on some other line of operations.

Steep inclines that cannot be surmounted except by a long detour must be overcome by funicular inclines, worked by crabwinches or capstans when short, or by steam winding engines, either fixed or carried on traction engines, as commonly used by the Royal Engineers at Chatham and Aldershot, when long.

Fixed winding engines for this purpose would naturally have to be designed in parts that can be easily handled, and carried in the trucks of the field line for erection *in situ*. These trucks would, of course, have to be hauled up the incline by stages by means of crabwinches or capstans, as is ordinarily done by the artillery when hoisting heavy guns into position.

The essential is to keep the line as straight as possible, so as to simplify guard and patrol duties, due regard being had to the engineering exigencies of the case.

It may be desirable for the permanent line, even at the outset, to follow the field line; but, as a general rule, it will be the function of the permanent line to pursue the detours.

Cases will often arise in gorges where there is room for only one line. The permanent line must then displace the field line during a session of traffic when it catches it up.

It may be accepted that there will be no bridges capable of taking a locomotive on the field line, so that the permanent line must be prepared with rolled steel beams and steel trestles for crossing gaps that cannot be bridged by "bunched rails" and crib piers and abutments. Energetic reconnaissance in peace time can alone give data to enable an estimate of these requirements to be made.

The number of double bogie wagons required in the first instance depends on the system of laying adopted. Amount of rolling-stock. A minimum of 50 light double bogie wagons, capable each of carrying 100 yards of line, and drawn by two mules apiece, would be required for constructional purposes on each line of advance.

To lay efficiently with this number, a siding capable of holding a train of, say, 10 wagons would be required every two miles or so.

But with this number of wagons the most rapid laying would not be accomplished. In order to secure this there are two other accepted methods, each of which has its advocates. The one consists in having sufficient single trolleys or bogies to hold the length of line computed to be a day's work, say 10 miles; to have these all loaded up the night before, and starting them in a continuous stream. As each trolley is emptied it is thrown off the line (or "cut" in railway parlance). The number required is about 500.

The other method consists in using dismountable double bogie wagons instead of the single trolleys, and having proportionately stronger gangs to "cut" them. The number of such wagons required is about 150 for a day's work.

To work the traffic, and separate from the above, 16 double bogie wagons per mile are required. Open line. Hospital and passenger carriages up to a capacity of at least 50 wounded men per brigade would, it is hoped, suffice.

When opening for traffic the siding accommodation will have to be doubled to a capacity of 20 wagons. Signalling and traffic management. Signalling will be by telephone.

I need not lay stress on the necessity for exceptionally smart traffic management, for, to compensate for low speed, *viz.*, 1½ to 5 miles per hour, the crowd of vehicles will be enormous.

Teams would be expected to do 10 miles out with loaded trucks, and 10 miles back with empties. I have put two mules per truck. This would not be necessary on a fairly level line, and economy might be effected by stationing reinforcing teams at steep bits, though this system would result in lower mean speed throughout the line.

The Austrians, with a line of 2 feet 3 $\frac{1}{8}$ inches claim to be able to lay 9 $\frac{3}{8}$ miles a day without special preparation of surface, and to be able to deliver 150 wagon loads of army stores at that distance from their starting point at the close of the first day's work, provided the *personnel* be highly trained.

I am not so sanguine as to expect such flattering results.

Probably in our difficult country we might attain 10 miles and deliver 100 wagon loads at the end of the second day. For the third day, allowing a speed of 4 miles an hour, the first wagon started would reach its destination in 2 $\frac{1}{2}$ hours, and suppose they go in batches of 20 at 30-minute intervals, the last batch would leave the starting point 3 $\frac{1}{2}$ hours after the first. By that time the empties would be returning, and the troubles of the traffic department would be at their climax. I think it hardly likely that more than 220 truck-loads would reach the first camp 10 miles away. That is to say, 660 tons.

We have seen that the permanent 2-foot 6-inch gauge line can deliver 1,800 tons per diem. It would, therefore, require 3 field lines to clear that amount daily. I would prefer to put it at four.

Still, the amount is considerable—enough for a division of all arms for 4 days if these figures can be attained. Supposing we halve them, we would have 110 trucks, drawn by 220 mules, delivered at our first camp, 10 miles beyond permanent rail-head, at the end of the third day, added to 50 trucks at the end of the second day, drawn by 100 mules. Total, 160 trucks at 3 tons—480 tons, drawn by the same 220 mules, equivalent to 6,720 mule loads, or 3,360 camel loads.

The expense, the forethought, and the training required will be enormous ; but they are worth it.

For further information on the subject of field railways, on which I have but lightly touched above, I refer my readers to a pamphlet entitled "Narrow Gauge Railways for Military Purposes," which is a translation from the *Revue Militaire de l'Étranger*, April 1894, by Lieutenant E. H. M. Leggett, R.E., published by the R. E. Institute, Chatham, and to a lecture on this subject by Lieutenant-Colonel Tilschert, of the Austrian Railway Corps, reviewed in the *Neue Militärische Blätter*, April 1899.

These and other writings on the subject insist on the necessity of the *personnel* being highly trained, in order that any appreciable results may be gained.

We will now discuss how this *personnel* is to be procured, and sketch in broad lines how it is to get its training.

THE ORGANIZATION AND WORKING OF RAILWAY CORPS.

There are always two methods of considering a new organization to

Introductory remarks. carry out a definite object that has been clearly laid down. The one is to begin *de novo*, and build up to the best possible combination of elements ; the other is to utilize existing materials and mould them into shape

on definite lines, trusting to the intelligence of directing heads and managing individuals to evolve a solution that will in the end attain the same results as if the first method had been applied.

The faults of the first system lie in the fact that, in search of the very best possible, needless delay invariably arises in putting forward the project and fighting its merits, and eliminating its demerits step by step through the various stages till final sanction has been obtained from the responsible authorities, and till this sanction is recorded nothing has been done.

The faults of the second system are apparent at the outset, as is the case in all conversions, but the step by step progress, unlike that in the first system, marks a steady advance, so that if two such systems were to start together, the second would probably reach a workable stage by the time the first was receiving sanction.

In other words, the choice lies between setting forth a conception of the best possible, the second in advancing a scheme that is least likely to upset the existing order of things, and will be more readily acceptable in consequence to the responsible authorities. *Le Mieux est l'ennemi du Bien.*

Let us then consider what we want.

We want organized bodies of railway workmen that can lay and	work our light field lines with the utmost smartness and dispatch.
What we want.	

We want similarly organized bodies that will be competent to lay permanent 2-foot 6-inch gauge lines at a rapid rate in time of war. In connection with these we also require highly trained and disciplined skilled railway mechanics, artisans, and traffic officials to convey the materials to the construction gangs, and work the line to its utmost capacity when it is laid.

It is not sufficient that these men be skilled at their particular technical duties, but they must be able to defend themselves when the enemy is present in sufficient force to interrupt the progress of the work. I don't think it is necessary to quote the numerous authorities on this subject. The American War of Secession, Russian practice in Central Asia and Siberia, the Soudan Campaigns, are sufficient instances to quote in support of the argument that the railway corps working in the zone of active military operations must have a military status, and be subject to discipline. We cannot afford to add to the number of unarmed followers with our armies, and so our railway corps must be composed of fighting men.

We must not forget in addition to the above the less skilled, but none the less indispensable, workmen to rough out the track for the light field line and prepare the surface for the permanent one. I have purposely left these to the third place, because we have already got them in our Corps of Sappers and Miners and pioneer regiments. I have nothing further to say about them except that they would, of course, be set to work under specially trained railway officers, and be under the command of the Director of Railways.

We will now enter into further details for the organization of the special railway corps.

For these we have immediately at hand the three corps of Sappers and Miners. One company should be set apart from each corps, specially trained to lay and work the light line, using commissariat mules for traction. The instruction must be divided into two departments, *viz.*—(1) construction; and (2) working open line. For this purpose I would choose large military stations where there is considerable traffic in commissariat and ordnance stores. In these the field lines should be laid down alongside the cantonment roads, and regularly worked by the sapper company. In addition to this some miles of line should be at the disposal of the company for training in laying and dismantling. Every field day would be made an occasion for the exercise of this line. It could be laid out to camps of instruction for musketry, field firing, artillery practice, and so on, being dismantled after each operation is over.

Endeavours should be made to employ the line at a distance, so that its conveyance by railway may be practised. This would, of course, be done by laying the line from the storage ground to the railway siding running up and loading the spare rolling-stock, and finally following up with the construction trolleys, and carrying in the rail sections on them as the line is dismantled from the rear. This is an exercise that will require some arrangement, and the practice would be invaluable.

As soon as one company in each corps has been thoroughly trained, sections from other companies should be attached to it from time to time to learn the business, so that in the end every Sapper company will have a section of men familiar with the light field railway. It goes without saying that all the officers should be given an opportunity of being trained in turn, and extra officers from the Military Works Service should be attached from time to time to learn the business. This is more or less the system that is followed by the Royal Engineers in England, where the field and fortress companies all have a proportion of engine drivers and railway men, who are often found invaluable in lending temporary assistance to the regular railway companies. To be of any real value it would be necessary to fix the war establishment of each sapper railway company at a minimum of 150 non-commissioned officers and men.

Two companies and a pioneer battalion would have to be mobilized together to make anything like a beginning in war, the pioneer battalion being required to prepare the formation.

The work is extremely hard and wearing, according to Lieutenant-Colonel Tilschert, and it is more than likely that the services of the third railway company would be required early in the course of operations.

The first companies taking the field would have attached to them the requisite number of mules, with the drivers, harness, and line gear furnished by the Commissariat-Transport Department. Drag-

ropes and swingle-trees would, of course, belong to the railway equipment. Whether in the end it will not be necessary to have a corps of specially trained mules and drivers remains to be seen.

Many important details must necessarily be passed over lightly in a sketch of this sort. I enumerate a few as a sort of guide to what experience will hereafter furnish the necessary data for more accurate estimate.

In dealing with special stores of the nature of light railway plant efficiency will largely depend on the system of arrangement and stacking to ensure rapid handling, and so the duties of the storekeeper and his assistants will be of paramount importance. He will not alone have to unload the material from the permanent line, but have to distribute it in specially laid sidings, ready for the work as it progresses. He will have to pass a rapid eye over all the material, and set aside that which is damaged to be immediately repaired or rejected as unfit for use. He will have to superintend an extensive workshop of smiths, fitters, carpenters, and other workmen, and, above all, he will have to keep tallies of his receipts and expenditure of the special parts of the road, such as turn-outs, curves, right-handed and left-handed junction pieces, etc., etc. In all this there will be ample work for a smart officer, assisted by several warrant or non-commissioned officers.

This cannot be altogether divorced from the domain of the storekeeper, but it is better to keep it separate. In addition to overseeing the rolling-stock before it is used, looking to the state of repair, greasing and oiling of the parts, there will have to be a staff of surveyors to examine the trucks and carriages as they come in, and carriage cleaners to sweep out and look to the cleanliness of the hospital and passenger cars.

The yards must be kept in a tidy and clean state, involving the presence of several extra hands, and water-supply may have to be organized and conveyed along the line in tanks.

I would like to do all this by military labour, and not add to the deplorable number of followers with an Indian army, but perhaps this is too much to expect; and seeing that the introduction of rail transport will greatly reduce the number of animals and their attendants at permanent rail-head, we may be content to employ largely for these duties specially enlisted men drawn from the civilians employed on railways, and so spare our soldiers for work nearer the enemy.

So much for the Light Field Railway Construction Corps as a first step towards a more complete organization.

RAILWAY BATTALION FOR PERMANENT 2-FOOT 6-INCH GAUGE LINES IN WAR.

The best introduction to this subject that I can quote is an article that appeared in the *Times* for 4th January 1900, entitled "Our

Railway Companies," and various items of news that have appeared from time to time to the effect that a special railway corps is being organized for service on the lines of railway in South Africa, the men being enlisted for a given period or for the duration of the campaign. This is sufficient evidence that, in the opinion of those most concerned, for railway operations in war time, the corps of workmen must be enlisted soldiers. We have hitherto trusted to getting these men together at the outbreak of hostilities, and in consequence much delay in setting to work has resulted.

The English army can take the field with two specially trained Royal Engineer railway companies brought up to a strength of 158 all told by drawing on the Reserve (see Appendix I). The campaign in which we are now engaged, an exceptional one, no doubt, from a transport point of view, has proved conclusively that these two railway companies can only be looked on as a nucleus for almost indefinite expansion on the scene of operations.

The companies include in their *personnel* every class of functionary of the various departments into which the working of a railway is necessarily sub-divided.

A noticeable point is the preponderance of men of high technical qualifications, such as locomotive and other engine drivers, erectors, fitters, smiths, and other shop hands who can be readily drawn from the Corps of Royal Engineers and from the Engineer Railway Reserve, while the proportion of construction men, such as ordinary labourers and platelayers, is comparatively low, and has to be supplemented from local resources.

There is no source of supply in India from which technically skilled enlisted soldiers can be drawn, whereas we have an unlimited supply of troops who can be organized to form construction corps.

So the organization I have to propose, as best adapted to local conditions, is a reversal of the order of things obtaining in the English army. In other words, I propose that the nucleus be a large body of construction men to be supplemented on mobilization by the requisite proportion of technically skilled soldiers, drawn from a special railway reserve.

For laying a standard gauge line at the rate of a mile a day the following is an actual return:—

(i) Skilled men—

Mates, 15	at Rs. 15	a month.
Rail-carriers, 132	at 7 annas	a day.
Rail-loaders, 120	at "	"
Hammer men, 56	at "	"
Auger men, 52	at "	"
Spacing sleepers, 8	at "	"

(ii) Unskilled men—

Bar men, 52 at 6 annas a day.

The hammer and auger men numbers include the men who held up the sleepers with levers and the packers.

The 15 mates include the men who screwed up the fish-plates, the system followed being for four men, two on each side, to screw up the nuts with 18-inch spanners as far as they could, followed by two men, one on each side, screwing up tight with long spanners.

The above-mentioned gang was one that followed the permanent-way engineer all over India, wherever he had a job for the time being, and consisted principally of Punjabi Mohamedans. Similar gangs are to be met wherever construction work is in hand. One, consisting principally of Bombay men, worked on the extension of the Soudan Railway in 1885, before the Egyptian railway battalions were organized, and laid the permanent-way over the road bed, which had been finished before their arrival by working parties of Egyptian infantry, under the direction of the officers and men of the 8th (Railway) Company, Royal Engineers.

The material trains for this line were loaded up from the barges on the Nile by working parties of Egyptian infantry, under the supervision of a single sapper of the Railway Company, and the engines were driven throughout the summer months—May to August—by European non-commissioned officers and sappers of this company.

Some of the engine drivers were volunteers who were enlisted for the term of duration of the campaign, and joined company in the Soudan some six months after it had begun work, when the regular establishment of engine drivers was at its lowest ebb from the effects of overwork.

I lay particular stress on these facts as evidence that Europeans are quite capable of working locomotives in a hot climate under trying circumstances, and also to invite attention to the fact that specially enlisted men cannot be assembled in sufficient strength at the outset of a campaign to take the field at the moment when they are most wanted.

To return after this digression to the permanent-way gang.

The figures are liberal, and are calculated for work with heavy permanent-way, *viz.*, 9-foot sleepers and 36-foot rails, 75 lbs. to the yard.

In order to secure for a pioneer railway battalion constant work, the establishment of 15 mates and 420 workers, at least, would have to be kept up.

For "mates" read havildars, or, perhaps, some native officers, and for "workers" read naicks and sepoy.

This would work out, with tool repairers (*i.e.*, smiths, carpenters, etc.), camp guards, and others looking after stores and interior economy, to as near 600 native officers, non-commissioned officers, and sepoy as possible.

To keep them employed some stipulation must be made with all companies undertaking railway enterprise in India to utilise their

services, and Government must make liberal terms in the direction of making matters easy for the companies, such, for instance, as paying expenses of transit to site of work; free supply of camp equipage; liberal supply of rations.

The charge in the contract for price of labour would have to be set at $\frac{2}{3}$ or possibly even $\frac{1}{2}$ market rate, it being borne in mind that the battalion is reaping experience in its military capacity from handling the tools and materials of the company for which it is working.

Such a battalion must be competent to undertake all the subsidiary work of permanent-way gangs, such as loading up and unloading girders, hoisting girders into position, making temporary and make-shift bridges, working cranes, pumps, reeving tackle, and erecting shears and derricks, etc., etc.

The question now is how to supply such a battalion—

- (1) By new enrolment.
- (2) By conversion of an existing battalion.
- (3) By drafting out unsuitable elements in an existing battalion, transferring suitable enlisted men from other corps, and making up to strength by fresh enlistment.

No. (1) presents the insuperable disadvantages that I have pointed out in my introductory remarks.

No. (2). In a converted infantry regiment it is to be feared that the native officers and old non-commissioned officers and sepoy would be very much in the way.

I have no hesitation therefore in advocating the 3rd method, and I would choose a battalion of the Madras army for reconstitution, because Southern India presents a large population of "No Caste" from which suitable recruits could be obtained for the rough hard work of a railway battalion, and Madras regiments already have in their ranks a large proportion of officers, non-commissioned officers and men whose caste prejudices are a negligible quantity.

I would suggest retaining a few of the old native officers and non-commissioned officers, say one native officer, one havildar, and one naick per company to stiffen the discipline, and keeping the young teachable men willing to learn the new trade of war and earn the extra money it will bring in by hard work. Some non-commissioned officers carefully selected from the Queen's Own Madras Sappers and Miners might be promoted to officer's rank, and some of the most deserving junior non-commissioned officers and men might be given stripes. The rest I would make up by recruits drawn from a good labour centre, tapping even permanent-way gangs as they are dismissed from their jobs.

I don't think I am too sanguine in expecting that on these lines the constitution of a pioneer railway corps would be readily realized.

The railway battalion should be railway pioneers first and infantry afterwards; but still soldiers. By this I mean that their musketry and

military training must not be expected to reach the same standard as that of the rest of the infantry. I would arm them with carbines and teach them to shoot, standing, at ranges up to 500 yards with the utmost precision. For it is to be understood that they must stick to their work in war till driven from it. In fact, they must be a *corps d'élite* in virtue of the special nature of their duties.

Arms.

For equipment I would give them the same belt and braces as the infantry, but substitute for the valise equipment a "ruck-sack," such as is commonly worn by German and Swiss tourists on the continent of Europe. This would be made of water-proof canvas, and would contain a pair of boots, blouse, cardigan jacket, flannel shirt or its equivalent, cooking pot and native plate, pair of socks, towel and soap (the work is very dirty sometimes), box of dubbing.

Equipment.

Uniform, khaki, of course, always; leggings, leather, fixed by straps wound round the leg.

Dress.

The difficulty of officering now presents itself. I would retain the officers of the Indian Staff Corps, who know the men and how to treat them.

Officering.

At the outset two Royal Engineer subalterns, one considerably senior to the other, should be posted to the corps, one to each half-battalion, and they would be required to foster the technical training and afford all the assistance that their education admits to the commanding officer. Whether these officers should rise in the regiment up to the position of command is a matter for after consideration.

But I would go further. I would attach to the regiment from time to time civil engineers of good railway repute, holding volunteer commissions, and when they had done their training in the corps bear them on the rolls as Reserve officers, to be called up on mobilization.

Finally, some expedient must be resorted to for transferring the non-commissioned officers and men of the corps to the Reserve, and for securing their employment by railway companies or State railways while in the Reserve.

Forming and employing reserve. It is very difficult to propose an exact term of years without interfering with the regulations for the army generally, and this would have to be settled by an Army Commission without regard to the speciality of the service. But in general terms I would suggest 21 years with the colours and 10 with the Reserve, such Reserve service to be spent in the employ of some railway company or a State railway. But any Reservist discharged by the company or State railway employing him for misconduct or inefficiency to be immediately discharged from the army.

Reams might be written on this subject. I confine myself to noting that for railway work such a thing as "sealed pattern" is quite superfluous. The requirements of the business readily determine the best

Technical equipment.

forms of tools and appliances for practical work, and the pioneer railway battalion would assimilate in the course of its work the best forms of technical equipment. The commanding officer should therefore be given a free hand in this matter, and, subject merely to financial control, be allowed to collect the equipment that experience proves to be the best. In this way the accumulation of obsolete and worthless stores will be avoided, and the technical knowledge of the engineers, Royal and Civil, posted and attached to the regiment should be directed to advising the commanding officer with regard to the choice of articles that are most up to date.

The engine drivers, fitters, carriage smiths, examiners, etc., engine erectors, and such skilled men must be
Working. a separate organization.

Everything points to enlisting a corps of Eurasians for these purposes eventually.

But, to begin with, I advocate following the plan resorted to in England, which is now producing such flattering results in South Africa. That is, to enlist a special railway reserve, consisting exclusively of railway workmen who are "efficient" volunteers. These men are specially enlisted, and at once passed into the Army Reserve. A certificate of trade efficiency is required, and the consent of the manager of the railway company by which the man is employed is obtained before enlistment. The applicant also signs a declaration as follows :—

I understand that if I cease to be employed in the _____
Railway Company, I shall be liable to be discharged from the Royal Engineers.

Place _____

Signature of recruit _____

Date _____

Witness _____

For further details see *Regulations for Recruiting, 1895*, Appendices VI and VII, which give the
Books of reference. "Approval of Manager," "Declaration,"

and list of trades to be enlisted, with conditions as to rating, etc., which must be read in connexion with the Royal Warrant for Pay, etc.

These Reservists draw "Reserve Pay" like any other Reservists, and enlist for three years' Army and three years' Reserve service, though they are passed to the Reserve immediately on enlistment. (*Recruiting Regulations*, page 23.)

See also for definition of Army Reserve *Manual of Military Law*, page 250.

To apply similar regulations to India would not appear to demand a complicated legislation. Rates varying
Regulations adapted to India. from 2 annas to 6 annas a day, according to race and status, should suffice as a retaining fee. The term of Reserve service might also be increased to 12 years or even longer.

The railway company employing these men must be prepared to part temporarily with the services of a proportion from time to time for duty on the construction works undertaken by the railway pioneer battalion. There is nothing new in this proposal.

When the Southern Punjab Railway was under construction the North-Western Railway lent a few engine drivers and firemen and engines to the agent and chief engineer.

I would select the North-Western Railway, Madras Railway, Eastern Bengal Railway, and Barsi Railway as suitable companies in which to locate these reservists. My reason is that if the war is on the North-West Frontier, the men could be withdrawn from the Madras, Eastern Bengal, and Barsi, and *vice versa*.

To get men trained in managing rolling-stock I would send chosen men from the Sapper railway companies and Railway Pioneer Corps to the Barsi and Eastern Bengal Railway, 2-foot 6-inch section, to be regularly employed as pointsmen, shunters, carriage examiners, cleaners, signallers, storekeepers, lamp-trimmers, guards, assistant station masters, etc., just as they now go from the Sappers to the Telegraph Department.

The officers and British non-commissioned officers for the selected Sapper railway companies might also be trained in this way.

For a really big war there are ready to hand the numerous Royal Engineer officers already trained in traffic manager's duties and a proportion of the proposed railway reserve.

Summary.

To summarize.

Reconnaissance, staking out, as well as all light field service lines pushed on ahead or branching to camps and posts, would be done by Sapper railway companies. One specially trained in each corps, with officers selected for this purpose. But any Sapper company should be competent to make, unmake, and work a light field service line at a pinch.

Platelaying, rapid bridging, etc., for the permanent lines for strategic purposes and their extensions to be done by the Railway Pioneer Corps. But the road bed fit to take the permanent-way can be executed by any pioneer battalions under the direction of Royal Engineer and Civil Engineer volunteer officers taken from the Public Works Department Railways.

Traffic, *i.e.*, engine driving, engine and carriage building and repairing, traffic management, organization of stations, hospitals, ambulances, etc., will be done by the Railway Reserve Corps under a

Colonel* or Lieutenant-Colonel of Royal Engineers and officers drawn from the Railway Administration, with the assistance of specially trained sappers and pioneers, referred to in the paragraph on "Traffic management and training generally."

Director of Railways and Staff. The Royal Engineer Colonel* would be gazetted Director of Railways and should be allowed to select his own Superintendent of Way and Works, Traffic Manager, and Locomotive Superintendent.

These officers ought to be selected and warned in peace time, so that they may know what is expected of them. The adjutant-general would keep a list of such officers, and be prepared to replace casualties from his roll and warn the waiting men.

There are many Royal Engineer officers in England trained in the locomotive department, and there are some in India partially trained. Unfortunately, they have no means or opportunity of keeping up their knowledge under existing conditions.

This, I think, I have provided for in my former paragraph on "Training generally." The commencement must necessarily be modest. A beginning must be modest. It might begin with the training of the Sapper companies and the constitution of the railway pioneer battalion.

Then would follow the railway reserve with, say, six of each indispensable trade. There are numerous minor functionaries in and about railways who could be furnished from the railway pioneer battalion and sappers, such as storemen, pumpers, coal trimmers, orderlies, messengers, care-takers, and so on. Porters would be supplied by fatigue parties from the troops.

For regulations we already have the *Rules and Regulations for the Working of Railways in War in Foreign Countries*, published

by the War Office, ^{Gen. No.} 3405, and the working rules of any line can be adopted for guidance. ₃₅₀₁

Many misconceptions exist as to the nature of work required in the field when a state of war exists. An idea is prevalent that in war "rough and ready" is the order of the day, and that this order equally applies to railway. Misconceptions.

There is no greater error. Experience has taught us that the road bed, platelaying, engine driving, and management must be the

* Or specially selected civil engineer holding a commission.

best of their kind. It is just as easy to lay a railway well as badly, and every care bestowed on rolling-stock repays more than four-fold.

It must never be forgotten that the railway man who is careless about his line, rolling-stock, or management is trifling with the lives of his comrades.

I think I may claim that the organization imperfectly sketched out above is modest. I have aimed at no ideal. My proposal is what I honestly deem a workable scheme, and should it fall short of the expectations formed on this important subject, I can only take refuge in the words of my motto: *Le Mieux est l'ennemi du Bien*.

There is absolutely no doubt in my mind that the first grand mobilization will show how essential it is for the Indian army to possess a perfectly organized military railway system; and eventually we must follow the German method, however much we may dislike being copyists, and become possessed of a military line of railway worked by a purely military staff, and so situated that it may be abandoned on the first whisper of war and the *personnel* hurried *en bloc* to the front.

APPENDIX I.

RAILWAY COMPANY, ROYAL ENGINEERS.

Way and Works—

Foremen platelayers ...	...	...	...	...	...	...	4
Platelayers ...	...	...	...	...	...	...	32
Carpenters ...	...	...	...	...	...	...	4

Loco. Department—

Loco. foreman ...	...	...	...	...	...	...	1
Engine-drivers ...	...	...	...	...	...	...	10
Firemen ...	...	...	...	...	...	...	10
Fitters ...	...	...	...	...	...	...	10
Cleaners ...	...	...	...	...	...	...	5
Smiths ...	...	...	...	...	...	...	4
Moulder ...	...	...	...	...	...	...	1
Carpenters ...	...	...	...	...	...	...	8
Painters ...	...	...	...	...	...	...	2
Riveters ...	...	...	...	...	...	...	2
Boiler-makers ...	...	...	...	...	...	...	2

Traffic—

Traffic inspector	1
Station masters	...	...	...	...	...	...	5
Signalmen	...	...	...	...	...	...	10
Guards	...	...	...	...	...	...	10
Shunters	...	...	...	...	...	...	10
Storemen	...	...	...	...	...	...	2
Assistant storemen	...	...	...	...	...	...	2
Clerk	...	...	...	...	...	...	1
Draftsman	...	...	...	...	...	...	1
Surveyor	...	...	...	...	...	...	1
							138
Storeman at base	...	...	...	...	...	...	1

139

Exclusive of : C.S.M., 1 Pay Sergeant, 2 Buglers, 11 Drivers=15, and 4 Officers.

APPENDIX II.

Here, perhaps, I may be pardoned a slight digression on engineering possibilities, although these do not come strictly within the terms of the essay.

In contemplating the frontier and hill railways of India it is remarkable to anyone who has seen similar lines in other countries to what an extent the most modern engineering appliances have been neglected. The engineers of our difficult hill lines have apparently ignored the possibilities of the rack and pinion system and funicular inclines in favour of the more tedious, if less expensive, adhesion system, which involves them in longer distances and more tortuous trace, with their consequent high maintenance charges and wear and tear of rolling-stock. Of course, the Abt, or whatever rack system may be chosen for adoption, would not be blindly followed by the engineer without a careful comparison of its *pros* and *cons*; but when one sees such system in use in Japan on a 2-foot 6-inch gauge, and on the continent of Europe in various forms and gauges, it would appear that there is some fault in their neglect in India.

I am aware that prejudice has existed in India for some time to the rack system, based, it is to be feared, on very insufficient experiments, which proved a failure. An argument has been found against it in the large range of temperature of the frontier climates, but I hardly think this can be sustained when we come to consider the high ranges of temperature encountered in the Black Forest and Swiss valleys during the late summer and autumn months, when such railways are in full swing.

It is, perhaps, needless to remark that rack and adhesion systems can be combined, and in this way a favourable plateau can often be reached by bunching all the difficulties of the line in one steep incline, and thus securing a straight instead of a tortuous road, resulting in an easily defended line, instead of one presenting so much dead ground that a small body of active, resolute men can lift the rails at ever so many points under the very noses of the line patrols.

I have already alluded to the use that might be made in connecting up positions by funicular inclines. But this is a very limited application of an expedient which is largely used for the carriage of minerals and other heavy goods in Spain, Italy, France, Germany, and Switzerland, and in some parts of England on a smaller scale. Where water is available a simple counterpoise system can be arranged, or the winding drum can be driven by a turbine. Steam-power is very frequently applied direct to the drums, or the system can be worked by electricity from any suitable central station, whether driven by water or any other power.

Another system that appears to have been much neglected is that of ordinary electric traction.

A very great deal of misconception has arisen on this subject, especially as regards initial cost of installation and prime cost of power. Many have run away with the idea that for advantageous working water-power is absolutely necessary because of its low cost. Certainly, under favourable conditions, with a constant, gravitation water-supply, water-power is no doubt cheap in the end. But it is apt to be forgotten that the initial cost of capturing the water and bringing it to the motors has to be considered, and that these works are a set-off against the price of other motors. But in a country like India, which produces its own coal, there is no reason whatsoever why electric railways should not be driven by central power stations worked by steam. The only difference is that instead of the horse-power being distributed over the line in the form of locomotives and coal, it is collected into one central station, easily controlled, worked, and defended.

I see special advantages in working short lengths of line in imperfectly settled districts, where the carrying capacity of the line is not required to be very great. Such, for instance, as a line for the supply of stores to the garrisons on the border, where the line is liable to be cut at any moment by discontented tribesmen or mischievous fanatics.

Let us suppose any case of a line, say, 9 miles long.

The generating station would be at the end of the steam railway, secure from molestation, and the 2-foot 6-inch gauge railway, arranged for electric traction, would be pushed on as straight as possible to its destination.

Any serious acclivity, unsurmountable by simple adhesion, could be breasted by a funicular incline or rack line, worked by electric power either from the generating station or from a battery of accumulators, as the case may be, the essence of the project being that the engines and dynamos must be at one end of the line, out of danger of attack, and the battery of accumulators at the other end, suitably protected, and so that the current would be passing throughout the night to charge the accumulators for next day's work.

Of course, the hoisting engine for the funicular incline would need to be protected by a block-house. It would probably be convenient to locate the bulk of the accumulators in this block-house, the balance being stored at the terminus.

A searchlight in the block-house could be directed along the line, most probably in both directions, for a considerable distance. The faculty of being able to work to such a steep grade as seven per cent., and the introduction of funicular or rack inclines makes it easy for the engineer to keep his line free from curves, so that watching and defence of the line are simplified.

Traffic would, of course, be managed by telephone, but alarms could be transmitted by wireless telegraphy in case of disturbances.

Such a line, driven on the trolley system, would present this advantage, *vis.*, that anyone endeavouring to tamper with the conducting wire would meet with serious injury unless provided with elaborate insulating appliances. This could be almost insured by carrying the telephone wire on the same bracket as the conducting wire, and so near it that the odds would be in favour of the would-be destroyer coming in contact with both wires.

Capacity.

Over a mean grade of even seven per cent. more or less continuous rise this would be about six tons an hour.

Plant required.

Roughly, the plant required may be estimated at—

Two 50 horse-power engines, one of which would be the relief engine as a rule, though both should be capable of working together when a special effort is required.

Two continuous current dynamos, say 800 volts—40 to 45 ampères—same remark as for engines.

Accumulators to the number requisite. It is impossible to give accurate figures, for so much depends on the grade of the funicular incline, if there be one.

The disadvantage of electric traction is that if the conducting wire be cut power of traction ceases over the break. This, however, could be easily got over by using light maintenance trolleys driven by a petroleum or other motor. One at each end of the line would suffice to carry the necessary men and stores for repairs. After all, the distance is only four-and-a-half miles from either end, and the repairing party would have to time its movements by those of the troops sent out to picquet the line.

Disadvantages.

This would be about 1,200 lbs. per diem, of the quality usually met with in India. The figure is a large one, I admit, as compared with about half the amount that would be required to work a daily train drawn by a locomotive plus what would be required to work the hoisting engine of the funicular incline. But the current generated would suffice for the lighting of the station-yard and adjoining fort and barracks, and the expenditure is small as compared with the up-keep of the equivalent number of camels requisite for the transport of 50 tons a day, *viz.*, 2×385 , *i.e.*, 350 going out, and 350 coming back empty, plus 10 per cent.

Expenditure of fuel.

I daresay my ideas will be characterized as too extravagant and complicated and out of all proportion to the task in hand. My rejoinder is that the English nation has proved itself culpably slow in adopting the power put in its hand by the developments of scientific engineering, and I am convinced, after some experience of the savage tribes on our frontier, that the speediest way of dominating these turbulent spirits is to display our overwhelming strength in an unfamiliar and unexpected form.

SOME NOTES ON THE PEACE CONVENTION HELD AT THE HAGUE IN MAY 1899, WITH ITS RESULTANT EFFECT ON "CUSTOM OF WAR."

BY MAJOR W. D. THOMSON, 1ST BENGAL LANCERS.

The Blue-book of the Peace Convention was presented to Parliament in October 1899 by the irony of fate the very month in which the British Empire embarked on the most important war in which she has been engaged since the beginning of the century—a war in which 200,000 troops gathered from every part of the Empire took part.

The inception of the Convention is due to the desire of the Czar to endeavour to limit the excessive and continually increasing armaments of the European powers.

It was evident before the first meeting of the Convention that there was no chance of even seriously discussing the possibility of disarmament. The English Ambassador at St. Petersburg writing to Lord Salisbury in January 1899 said that Count Muravieff had mentioned to him the change in the aspect of the political horizon since the Czar's eirenicon has been issued, and mentioned that England, amongst other powers, was employed in increasing its armament. This was a somewhat startling statement to be made by a power which was at that very moment occupied in forcibly altering the constitution of Finland, so that more men might be made available for universal service; made too to the representative of the only first class power in Europe which was free from universal service, and which showed conclusively nine months later, that not only had she not increased her army, but was hopelessly unready for war even with the South African Republics.

However, the Convention met at the Hague in May 1899; and though it was unable to go further than to express an opinion that it was desirable to reduce armaments, and a hope that means might be found to do so in the future; yet it occupied itself for six months in what it is trusted will in future prove to be useful discussions as to the possibility of voluntary resort to arbitration when the interests of two States clash, and how that arbitration should be carried out, also as to the means of minimizing the horrors of war by giving a more humane construction to what is known to jurists as "International Law in Time of War" and to soldiers as "The Custom of War." It may interest some readers of this Journal if I state briefly what conclusions were come to on these points.

The agreement come to by the Convention as to the best means of maintaining the general peace was formulated under six heads—

- (i) On good offices and mediation.
- (ii) On international commissions of inquiry.
- (iii) On the system of arbitration.
- (iv) On a permanent court of arbitration.
- (v) On arbitral procedure.
- (vi) On general provisions.

Nothing very new or original was brought out under any of these heads except under (iv).

The British representative, Sir Julian Pauncefote, suggested that a permanent international court (*cour arbitrale*) should be instituted to which all disputes amongst nations could be referred. This eminent diplomat had been the British representative at Washington and may have gained the idea from his knowledge of the working of the High Court of the United States.

It was finally recommended by the Convention that each signatory power should select four persons, of known competency in questions of International Law, as well as of the highest moral reputation as arbitrators. If two signatory powers wished to have recourse to arbitration to settle difference, arbitrators should be called on from those selected as above to investigate the question and give an award.

An International Administrative Council and International Bureau was to be instituted at the Hague to carry on all procedure, correspondence, etc., connected with this "arbitral court."

If the arrangements indicated by this resolution could be carried out, civilised nations would certainly have made a long step towards reaching the age of gold, but the most cursory examination of the proposed basis of the court shows that it is a counsel of perfection and hardly a really workable institution.

No power *need* resort to the court, and if a power does so resort, and is dissatisfied with the award, there is no paramount authority to enforce such award. It is obviously unlikely that a power would resort to arbitration unless it is rather doubtful of its ability to enforce its own views on the power it is in disagreement with, by war if necessary, or unless it considers that the point is so insignificant that it is not worth fighting over.

We have typical instances of this in the attitude taken up by the United States and Great Britain lately on several questions.

When the Venezuela question was in an acute stage, America contended that every boundary question which arose in the North and South American Continents should be submitted to arbitration; but when a very vexed and burning question concerning the Alaskan and Canadian boundary arose in the Klondyke region, the United States refused flatly to consider arbitration as to Dyea and Skagway and the wished for port on the Lynn Canal.

Again, we have our own case. Though we have several times resorted to arbitration on comparatively unimportant points, invariably to our own detriment, yet when it came to be a really vital question such as that of the Transvaal, the country was unanimous in rejecting all mention of it and the question really hardly arose. We will now turn to the more practical question of the amelioration of the laws and customs of war by land and by sea.

"Custom of War" is a very difficult subject, though many people especially newspaper correspondents, speak and write of it with a cocksureness, born of ignorance and freedom from responsibility.

It is one which is seldom studied even by soldiers, and so there is always doubt and hesitation when these customs have to be put into force on active service.

The Convention may be congratulated in having taken one very admirable step in recommending to the powers the extension of the principles of the Geneva Convention to Maritime Warfare. When the above historical Convention assembled, whether from oversight, or from a consciousness of the difficulty of the whole subject, which necessitated only tentative steps being taken, the rules of the Convention as to hospitals, etc., extended only to war on land.

They were at the Hague, with an unanimity seldom seen in the debates there, extended to sea warfare. Arrangements were made for the recognition of hospital ships, and for the exemption from capture of neutral ships taking on board sick, wounded, or shipwrecked seamen, during the naval battle; also for a similar exemption for the religious, medical or hospital staff of a captured vessel.

It is to be hoped that when a naval battle is next fought many unfortunate people, who have hitherto of necessity either perished or encumbered the already limited hospital accommodation of the battle ship, will have a better chance of escape from death than has hitherto been the case.

Amongst other proposals originally made by the Czar were the following :—

- (a) That sub-marine torpedo boats should be forbidden.
- (b) That battle ships should in future be built without rams.
- (c) That more powerful explosives than those now in force should not be employed either for rifles or big guns.
- (d) That the throwing of bombs, shells, etc., from balloons should be forbidden.

When these points came to be discussed the various points of view of the different nations were most clearly displayed, and the results were such as would make a cynic doubt the utility of these Conventions.

The prohibition of the employment of sub-marine torpedo boats was only voted for without reserve by five States, namely, Bulgaria, Greece, Persia, Siam, and Belgium. Not one of these States has a navy, but they cast equal votes with first class maritime powers. The proposition was of course not carried and sub-marine boats are being built in feverish haste by every sea power except Great Britain.

The same fate awaited the attempt to stop the use of rams, though France joined with Greece, Siam, and Bulgaria in voting against their construction. One cannot help speculating what France was doing "in that galley."

The proposal concerning the restriction of the employment of higher explosives than those now in use fell through as was inevitable, but a declaration was made against the use of projectiles, the object of which was the diffusion of asphyxiating and deleterious gases

This was voted with only one dissentient voice, namely, that of the United States delegate. He very sensibly observed that he did not see that the employment of a temporarily disabling gas was more inhuman than that of a shower of lead, so he declined to consent to the inventiveness and ingenuity of his fellow countrymen being limited in this respect.

The Convention also recommended that for a period of five years the launching of projectiles and explosives from balloons or by any new method of a similar sort should be forbidden.

This would of course bar the use of air ships, flying machines, etc. The reason given by the Russian humanitarian who brought forward this proposal was that it was not fair to throw bombs under circumstances in which there was no fear from answering projectiles, he wound up with the high sounding maxim "*Soyons chivaleresque même dans la guerre.*" The theory advocated by him would, if carried to its extreme point, bar the use of guns of longer range than those possessed by the enemy, and would forbid the use of breech-loaders against savage foes.

These last two proposals did not raise much discussion, probably they have neither of them as yet come within the range of practical warfare, though the Zeppelin "dirigible air balloon" may be a step in that direction.

Before passing to the rules for the custom of war proper, it is necessary to notice two motions brought forward independently by delegates.

The first was a proposal that the Dum-Dum and other bullets of similar nature should be forbidden. This proposal was clearly and almost avowedly an attack on Great Britain who had lately been forced to use such bullets against savages, and was adopted unanimously by all the powers except Great Britain and the United States, the only nations it will be noticed that had had recent experience in actual warfare of small bore bullets entirely cased with hard metal.

The subsequent fate of the soft bullet may be noticed.

The British Government, when war with the Transvaal was imminent, withdrew from use all soft-nosed bullets and have used hard cased ones throughout. The Boers, on the other hand, though with every wish to use hard bullets, were driven by want of ammunition, not only to use a class of bullet condemned by the Convention, but eventually were reduced to Martini-Henry and sporting ammunition. We cannot seriously blame them, as necessity has no law, but the fact shows how difficult it is to make binding laws for war which necessity will not make combatants throw aside without scruple when it comes to the pinch.

The resolution in question was brought forward by the Dutch delegate and its infraction was the act of their kinsman, the Boers.

The other proposal which was brought forward was one by the United States as to the very difficult question of private property on

board non-combatant ships in time of war. Numerous jurists such as Bluntschli (Bavarian), Byukerhock (Dutch), and most Prussian and French writers on the subject have advocated the principle of "free ship's free goods," and even that property of a non-combatant who is a citizen of a belligerent nation should be respected at sea as well as on land. It was apparently this last question which America wished to bring forward.

This principle has always been steadily resisted by England, as it would always be by any nation which had the bulk of the carrying trade of the world and the largest navy in the world, as it would prevent all interference with the enemy's commerce. The question is inextricably mixed up with that of privateering, concerning which jurists have been disputing for hundreds of years. After some discussion it was decided that this proposal did not come within the limits of the subjects which were before the Convention.

The recommendations concerning the custom of war proper were divided into four sections, *vis.*—

Section I.—On belligerents.

Section II.—On hostilities.

Section III.—On military authority over hostile territory.

Section IV.—On the internment of belligerents, and the care of the wounded in neutral countries.

Under the 1st heading not very many new points were raised, but a good many humane customs which had been, as a rule, observed in late wars now received the sanction of authority. These customs chiefly refer to prisoners of war, and a few of the least known may be specified. For instance, no personal property except arms, horses, and military papers may be taken away from such prisoners.

A bureau for information relative to prisoners of war must be instituted by each belligerent. It should be kept informed by the various services with the necessary information to enable it to keep an individual return for each prisoner.

Gifts and relief in kind for prisoners of war are to be admitted free of import duty, as well as of payment for carriage on Government railways.

The wills of prisoners of war will be received or drawn up on the same conditions as for soldiers of the national army.

This last provision seems at first glance unnecessary, but is required owing to a legal theory that a prisoner of war while in captivity or on parole loses his civil rights. The point was raised in Parliament when a peer who had been captured in the York Town capitulation in America came to England on parole and was prevented from voting in Parliament.

A nuncupative will made by a deceased prisoner of war while in captivity would probably now be accepted by our courts if properly proved.

Prisoners of war are to be allowed every latitude in the exercise of their own religion, including attendance at their own churches, provided that by such attendance they do not infringe any police regulations drawn up by the military authorities.

Finally, a doubtful question was decided by the declaration that a war correspondent is an ordinary prisoner of war. We know of one instance in which General Joubert enforced this in the Transvaal, the war correspondent subsequently making a sensational escape, but in several other parts of the theatre of war, war correspondents appear to have claimed the same immunity as is given to doctors and ecclesiastics, and to have been on more than one occasion released.

Under the heading of hostilities we find that it is forbidden—

- (i) To employ poison or poisoned arms.
- (ii) To kill or wound treacherously individuals belonging to the hostile army.
- (iii) To kill an enemy who has laid down his arms.
- (iv) To declare that no quarter shall be given.
- (v) To employ weapons or material of a nature to cause superfluous injuries.
- (vi) To make an improper use of a flag of truce, of the national flag, or national ensigns and the enemy's uniform.
- (vii) To destroy or seize the enemy's property unless such distinction or seizure is imperatively demanded by the necessities of war.

Of these (ii) justifies the most stringent measures against ununiformed irregulars of the franc-tireur type, who having no uniform or having taken off their uniform by this means get close enough to kill sentries or to shoot into camp.

Most people would imagine that there had never been any doubt about (iv), but it will be found that in the American instructions, as late as 1863, it was contemplated that under certain circumstances no quarter should be given.

(vi) Has been the cause of much recrimination in South Africa during the present war, and no doubt the white flag has been often misused, but there are complaints about this, and about firing on ambulances and on red cross bearers in every war. The Berlin Conference nearly thirty years ago went into the question at great length, and it was decided that the use, or acceptance of a flag of truce or white flag as a token of surrender, only applied locally to the part of the field it was hoisted in, except of course when it was used by the order of the officer in supreme command as at Sedan.

It was stated at this Conference that the white flag had often been used to obtain ten minutes to allow of the evacuation of what was becoming an untenable position. Probably when the full history of the Transvaal war is known, it will be found that the improper use of the white flag was made in nearly every instance by small semi-independent parties of burghers who from their education and antecedents were not as alive to the obligations imposed by this emblem as their leaders were.

(vii) Is also a point about which controversy is sure to rage bitterly. No one but the responsible officer on the spot can be a judge of the necessity of war which makes it incumbent on a belligerent to destroy private property. The owner of the property and the belligerent naturally hold different views on the matter and the former will express his views in unequivocal language; but it may be taken for granted that an officer in a responsible position will not order the destruction of farm houses, crops, warehouses, etc., and risk the inevitable ill-feeling which will ensue, and in these days of newspapers find expression, unless he considers he has a very adequate reason which makes the action incumbent on him for the safety of the troops under his command.

Under this section comes one more important stipulation, *via.*, that the bombardment of towns, villages, habitations, or buildings which are not defended is prohibited. There has never been any practical disagreement about this in land warfare, but it is a very difficult point in naval international law. Many sailors say that the position with regard to a coast town threatened by a man of war is quite different to that of an inland town threatened by an army. The latter can be surrounded and occupied and many means may be used to bring the inhabitants to reason, they being unable to escape readily; but a ship cannot do this and can often only obtain munitions both "de guerre" and "de bouche" by threat of bombardment. The French claim that this will be a most potent method of putting pressure on a hostile maritime country which is not open to ordinary attack. Hall in his book on International Law says that when war with Russia was imminent in 1878, the Russian cruisers in the Pacific were going to make a dash for the undefended Australian ports.

The question will probably be settled in the next great naval war.

The only other point in this section which I need notice is the treatment of spies.

It is laid down clearly that a spy when captured is "not to be punished without previous trial," and that a spy who rejoins the army to which he belongs and is subsequently captured by the enemy is to be treated as a prisoner of war; and incurs no responsibility for his previous acts of espionage.

This provision has hitherto been usually adhered to, but as far as I can discover has never before been laid down in so many words. To depart from it would be to risk the execution of great numbers of innocent people. This has been proved over and over again in the cases of unfortunate foreigners who happen to be shut up in large cities during a siege. At such a time the mob is inclined to look on any and every foreigner as a spy.

Section III—Deals with military authority over hostile territory.

Most officers, if asked to state when military authority over a hostile country begins, would be puzzled to say. In this Convention the answer is clearly given: "Territory is considered occupied when it is actually placed under the authority of a hostile army. The occupation applies only to the territory where such authority is established *and in a position to assert itself.*"

The occupant may collect the taxes, dues, and tolls imposed for the benefit of the State. This should be done, as far as possible, in accordance with the rules in existence and the assessment in force, and the occupying power is bound to defray the expenses of the administration of the occupied territory on the same scale as that by which the legitimate Government was bound.

It is usual when the civil and judicial officials of the occupied country are willing to stay and carry on their ordinary duties to administer the country through them; but if they are not available, it will be necessary to appoint fresh ones at the discretion of the occupier.

It is only necessary to remark on three more points treated of in this section. They are that—

- (a) An army of occupation may take possession of the cash, funds, and property liable to requisition, belonging strictly to the State; also all depôts of arms, means of transport, stores and supplies, and generally all moveable property of the State which may be used for military purposes.
- (b) The occupying State takes over temporarily in what is technically known as "usufruct" all the public buildings, real property, forests, and agricultural works belonging to the hostile State, and must administer them according to the laws of usufruct.

The property of religious, charitable, and educational institutions and those of arts and sciences, *even when State property*, should be treated as private property. All seizure or destruction of historical monuments and works of science or art is forbidden.

The last three provisos can be more easily explained by giving examples.

In 1870 the German Government took over the administration of the Forests of the Departments of the Meuse and the Meurthe, and felled and sold timber as they were entitled to do. They, however, exceeded their rights by most reckless clearing of whole tracts of forests, the timber being sold to contractors. At the end of the war immense numbers of trees were lying in the forests; and the

French Government, while acquiescing in the sale of all that had been removed, confiscated all the timber which had not been carted away, and the contractors could get no satisfaction out of either Government, which may be looked on as a warning to grasping contractors dealing with an occupying Government. Again, when the German army reached Dieppe in 1871, a tobacco factory in working order, belonging to the French Government, was found there. Tobacco is or was a Government monopoly in France. General von Goeben explained to the municipality that as State property, this manufactory belonged to the occupying Germans; and as he could not work it, or carry it away, and did not want to burn it, he would sell it to the town. This was ultimately done, the town paying 75,000 francs for the usufruct.

The last concrete example exemplifying this section relates to public monuments and objects of art and science.

Napoleon after Jena destroyed the Rossbach Column, and during all his conquests he appropriated, to call it no harder name, all the most valuable of the pictures, statues, etc., which were found in the occupied cities. These were sent to Paris.

When the Allies occupied Paris in 1814, Wellington had the greatest difficulty in preventing the justly incensed Blucher from blowing up the Bridge of Jena, and all the captured treasures had to be carefully sorted out, identified and returned to their countries.

The fourth and last section of the custom of war agreement deals with the internment of belligerents and the care of the wounded in neutral countries.

It is clearly laid down that a neutral State when it receives within its boundaries troops belonging to either of two States which are in a state of war with each other must intern them *as far from the theatre of war as possible*. They may be confined in camps, fortresses, etc., and measures may be taken to prevent their escaping. The British Empire is especially interested in this at present, as great numbers of Boer soldiers crossed into Portuguese territory last October, and are by all accounts dribbling back now, and it is the duty of the Portuguese to stop this.

This question was much discussed in 1870 when great numbers of French stragglers of the Sedan Army and prisoners of war who escaped from their billets during the early part of the march to their place of internment, crossed the Belgian frontier, and, Belgium being very pro-French, were privately helped by the populace; not the Government; to get back to French territory and rejoin the ranks.

All the expenses of the up-keep of interned men are made good by their own State at the conclusion of the war; and we shall now see an interesting point raised by the Portuguese Government as to the expenses of the interned Boers. There is now no Boer State or executive to pay for the costs, and the Portuguese Government will look to be compensated by some one, or else they will release the prisoners.

It would be remarkable if it ended in the British Government paying for the support of large numbers of Boers in Portuguese territory.

Also for how long must the Portuguese keep them interned, as there will not apparently be any formal declaration of peace.

The difficulties of the Portuguese responsible officials will be immensely increased also by the fact of the Boer commandos not being uniformed, as it will be hardly possible to identify any man for certainty as a Boer combatant, once the formed bodies have been scattered.

The Convention was wound up by a final act which consisted of a recapitulation of the recommendations finally agreed on by the delegates. This was signed by all the representatives of all the powers present, but Sir Julian Pauncefote was careful to explain that he did not in any way bind his Government by doing so, as he was obliged to await further instructions, pending the examination of the Conventions and declarations by Her Majesty's Government and their approval by the Queen.

The Blue book does not say whether the requisite ratification was ever accorded.

A few general remarks may be permitted before ending.

One point especially strikes a reader which is that the representatives of the smallest powers have equal voting power at this and I suppose at all Conventions, with those of the greatest. For instance, we find delegates from Montenegro, Mexico, Persia, Servia, Bulgaria, Roumania, and even China voting on proposals concerning the action of large fleets, and their votes carrying nominally equal weight with those of England, America, France, and Germany.

Another is that the new declarations concerning the "custom of war" are a good example of the progressive spirit of humanity noticeable amongst the representatives of the most enlightened nations of modern times.

Compare the injunction here formulated that pillage is absolutely forbidden even when a town is taken by assault with the custom universal 300 years ago of delivering up the town to the soldiers for several days and deliberately leaving to their mercy the lives and the honour of the women and children found there.

Again, compare the modern arrangement for a bureau of information concerning prisoners of war to allow of their friends knowing of their welfare with the recognised custom enforced as lately as the time of Cromwell of putting to death all prisoners of war who could not ransom themselves and who were a burden on the resources of the victor.

In conclusion, the general survey of this Convention, while it gives the ordinary reader a most favourable impression of the very strong humanitarian impulse on the part of the Czar, to which the Convention owes its origin, impresses him even more with the difficulties which lie in the way of carrying out in practice, what seem at first glance to be the most obvious conclusions suggested by humanity and mutual national good feeling.

I think, however, that there is no doubt that if the Convention has done no more, it has done good by setting up a standard which it is desirable, if at present impracticable to reach.

CRITICISM AFTER CAMPAIGNS. THE BURDEN OF TROOP-HORSES.

BY LIEUTENANT F. P. P. ROUSE, 1ST LANCERS, HYDERABAD
CONTINGENT.

"A man must serve his time to every trade.

Save censure—critics all are ready made."—*Byron*.

Towards the close and after every campaign we are invariably treated to a voluminous amount of literature bearing on the shortcomings and deficiency of our military equipment, and on the lessons to be learnt from the experiences passed through.

As often as not no campaign was really necessary to point us out "the lessons to be learnt" as in many cases they must have been quite evident before ever the campaign began: but a campaign having taken place, with the accompanying heavy expenditure of money and loss of valuable lives, deficiencies become more glaring and those, who, had they written in the ordinary course of events, would have had very little chance of their proposals being given any consideration, now think that a favourable time has come in which their ideas and suggestions may no longer be considered unnecessary, if not quite uncalled for, and calculated to upset the even tenor of the way.

Hence the ever increasing articles "lessons to be learnt from—" or "some remarks concerning," etc., which in almost every paper, magazine, journal, and review we now see as a title to some military paper.

There is no doubt whatever that this is an age of criticism.

At no period in English history have men been so critical as they are at this the end of the 19th century—due no doubt to the spread and increase of education.

Formerly the mass of the population were contented to let those in authority and experts think for them more or less, but not so in the present day. There has seldom been any subject more universally criticised by Englishmen than the present war in South Africa, both as regards its justice or injustice and then as to the method in which it has been carried out.

Everyone pays his allotted share towards the up-keep of our army, and of late years even the smallest contributor would seem to consider himself in a minor degree a proprietor, and that as such his mite entitles him to criticise the doings of those towards whose up-keep he contributes.

Anyone who has been at home during the past year could not fail to be amused at the manner in which the actions of our greatest generals were criticised by "the man in the street" in London, and

by the country labourer wherever he could get an audience to listen to him: they all liked to have their say and air their views in public, and not a few of them would almost have you believe that if only they had been there themselves things would have been different.

This universal criticism by, in many cases, more or less ignorant persons may have its disadvantages, but at any rate it shows an interest taken in the course of events, and to take an interest in anything, provided that thing is not harmful is bound to do one a certain amount of good, and increase one's thinking and calculating faculties.

Everyone naturally conscientiously considers his own criticism sound, and this must be my plea for writing this article.

It is not improbable many will condemn on the spot or think not worth taking into consideration anything I may write since it has neither the support of age nor experience.

To such I would reply in almost the words of Mr. Winston Churchill, for his argument has always appeared to me sound, if what I write is practical, it needs neither the support of age nor experience, and if it is impractical, neither the one nor the other should fortify it.

After our last frontier war many wrote or spoke on the inefficiency of our transport, and on small matters such as dhoolies, etc., but the war in South Africa has been more prolific of "lessons to be learnt." This time the R. A. M. C., A. P. D., and A. V. D. have all come in for their share of criticism, but the cavalry would seem to have come off worst of all.

The infantry did not escape altogether nor the artillery; their chief defect criticised being their more or less obsolete equipment.

Much has been written or spoken on this latter point, but perhaps the clearest discussion was made by Mr. Winston Churchill in his speech on Imperial Defence at Plymouth on August the 17th. Having successfully contested the Oldham division in the conservative interest, we may expect to hear many another practical speech from him who, it must be confessed, has now acquired to a very fair extent 'the support of experience' if he has not yet 'the support of age' for his arguments.

It is quite evident now if it was not so before ever the Boer war commenced that our troop-horses are over-burdened. We must have known it for years, but the break-down of our cavalry in South Africa has really brought the matter home to us.

It is a very easy thing indeed to criticise, but to find a remedy for some existing evil is, as a rule, a somewhat difficult matter. But most things can be remedied, provided there is the determination and energy to do so, and that we, like Napoleon, do not know the word "impossible."

The condition to which our troop-horses in South Africa have been reduced is pitiful: we have constantly lost the fruits of victory owing to our cavalry being far too exhausted to carry out a successful pursuit even if they have been capable of pursuing at all.

I will give one example, though anyone who has taken part in, or followed in the papers the course of the Boer war, will probably recollect many others.

In the cavalry action of the Household Cavalry and 12th Lancers at Diamond hill—it was here we lost that splendid type of cavalry officer, Lord Airlie—we read “that the horses were so exhausted that the Household Cavalry had literally to flog them along with their sabres.”

Before they were launched into the attack the horses were ‘done’. It is to say the least of it disheartening to see your enemy moving away while you yourself are incapable of following up the advantage you have gained for no other reason but that your mounts are tired out and cannot carry the attack further.

What has been the actual drain on our troop-horses cannot yet be ascertained; but if at the end of the comparatively short march from Modder River to Kimberley—84 miles approximately—General French had, as was reported, close on 1,000 horses unfit for further effort, we may expect the number of casualties amongst horses for the whole campaign to reach a very fair total.

The great loss in horse flesh will, I think, be found to be mainly due to three causes, though a certain amount of exhaustion must be attributed to horses not being saved when opportunity offered and to carelessness and thoughtlessness on the part of the riders. This evil we have been told in a Circular Memorandum issued from Headquarters a short time ago can and must be remedied.

The main causes however, I think, would seem to be—

- (1) The nature and breed of the horses employed.
- (2) Insufficient and bad food.
- (3) Last, but by no means least, the extraordinary amount of dead weight we put upon our horses.

The first of these causes which also, to a certain extent, embraces the 2nd, for if we had horses of a hardier stamp and not ‘bred under conditions wholly artificial,’ they would not so readily break down when they have to put up with short rations or semi-starvation, as troop-horses during campaigns must necessarily at times be called on to do, has already been brought before our notice by Mr. Wilfred Scawen Blunt in his article entitled “How to breed horses for war” in the August number of the 19th Century Review.

With reference to this article, I may say that the regiment to which I have the honour to belong is mounted almost entirely on 14.2 Arabs, and no one could wish to see better horses; whenever they have been pitted against walers, they have never shewn themselves inferior, or to have laboured under a disadvantage owing to their smaller size.

In fact, it has been the reverse. The hardihood and pluck of the pure bred Arab, not your Gulf-Arab, is well known, and when the waler after a long field day, where he has had to rough it a little, returns home tired and jaded, the little Arab trots in as perky and game as can be. My regiment, I think, fully bears out the justice and truth of Mr. Blunt's assertions. One point, however, I must confess, and that is, that if instead of the sowar you put up the average British cavalry trooper with all his present impedimenta, it would be presuming on the endurance even of the Arab.

The third cause is the one I especially wish to comment on here and its importance is great, as until the present dead weight imposed on the horses can be reduced, it seems useless to think of substituting a smaller hardier breed, but at the same time one of less weight-carrying capacity for what we produce at present. Roughly speaking, the weight a troop-horse has to carry—I am talking of British Cavalry, not Indian—is 19 stone 4 lbs. This weight is not my own calculation except in so far as the weight of the trooper is concerned which I have placed at on an average 154 lbs. (inclusive of his clothes), and this latter weight is anything but exaggerated.

The dead weight of 116 lbs. was arrived at by a Committee which was assembled at Bloemfontein a few months ago.

The Committee came to the conclusion that under the existing arrangements as regards transport no means of reducing this crushing burden could be adopted, and so far the matter has remained in *statu quo*.

I give the detail here—

	lbs.
Saddle (including wallets, various straps, breast-plate, sword frog, carbine bucket, bit and bridoon)	34
Sword and scabbard	4½
Carbine	7½
Numdah	3½
Horse rug	4½
Blanket	4½
Water-bottle (full)	3½
Mess-tin	1½
Feeding-bag	1½
150 rounds of ammunition and bandolier	12
Cloak	5
Havresack, soap, towel, etc.	3
Water-proof sheet	2½
Corn-sack (1½ lbs.) and shos case (1 lb.)	2½
Two days' oats at 10 lbs. per day	20
Three days' rations, i.e., 1 lb. tinned meat and ½ lb. biscuits per diem with groceries	6
Total	116

The above seems an extraordinary weight, but the majority of it is absolutely necessary—all in fact save some 35 lbs.

A troop-horse, no matter how we could assist him, must necessarily always carry a very fair amount of dead weight, but he certainly carries, roughly speaking, 2½ stone which might be dispensed with *pro tem.*, such as one day's oats, one day's rations, part of the ammunition and certain of the minor items. It is this 2½ stone we want to make provision for, as if we could reduce the weight by this amount, the difference would be considerable—

“Oh the little more and how much it is!

And the little less, and what worlds away!”

Two-and-a-half stone is a lot in a protracted campaign: it would seem to be in fact “the last straw which breaks the camel's back”: only in this case it is the horse's back, not the camel's!

A few suggestions have been made regarding the manner in which the dead weight might be reduced such as "some sort of light galloping field carriage," but the proposals appear difficult to carry into effect, and in some countries the use of carts would be impracticable.

In an article in the *National Review* a short time ago the military critic of the *Westminster Gazette* in referring to the burden of cavalry horses said that "the remedy is simple enough." "A couple of strong but light two-horse carts could carry everything except perhaps one day's rations, and should be able to keep touch with the unit under every conceivable condition." I very much doubt it. In the last frontier campaign carts like these could certainly not have kept up with the cavalry, as in many places the use of two-wheeled carts was absolutely impossible.

Even if the country were moderately good, I think it would not require a very protracted campaign to show that the carts were more breakable than might be at first supposed, and that the weight would have again to be distributed amongst the horses. A single-wheeled transport vehicle, Russian style, or Captain Brooke Murray's one-wheeled transport cart which he invented some four years ago, might be practical, and after this last breakdown of our cavalry in Africa, perhaps it will be given a trial. It was made after the fashion of the Chinese wheel-barrow which has been employed in that country for hundreds of years. The wheel of the cart was about five feet high: the load seven maunds approximately, being arranged on either side with the bulk of the weight below the centre of gravity. It was propelled by three men. The cart was tried in the Malakand, but whether the experiment was a success or not, I have never heard.

What I think might be found practical is the employment of aged troop-horses—"casters"—sounder in fact than even the one-wheeled cart.

The rule in the service at the present time is to cast horses when they reach the age of fifteen, though plenty of them are by no means incapable of further work at this age.

They are either shot or sold for a mere trifle in India, generally to be used as ghari-horses in Bombay, Calcutta, and other large towns and possibly, no probably, a great many of them end their days uncared for and neglected when they have deserved better treatment after their long years of labour. Horses are not like men who after their life's work is done or nearly done settle down to pass their old age in peace—they too often end it in misery.

Why should we not "kill two birds with one stone"—delay the evil day of casting which in many cases might certainly with advantage be postponed, and at the same time form a transport of pack-horses out of would-be "casters"?

If we take 500 men as the strength of a regiment and wish to make provision for the 35 lbs. per man, the approximate unnecessary weight now carried, we should have some 18,000 lbs. to account for. If every pack-horse carried 200 lbs. together with a pack-saddle weighing some 26 lbs., 80 horses would carry the 18,000 lbs.: in other words, we should require 20 pack-horses per squadron. I should say that in the above 18,000 lbs. the food of the extra 80 horses themselves is included.

Having got the said pack-horses, we should require some practical means of conducting them.

One man, I think, would be able to look after two horses in addition to his own—one on either side—but whether for certain he would find this too much of a handful, no one can say off hand.

If this method of conduct were found to be practical, we should require ten men per squadron. These ten men might either be chosen or take it in turns, or we might employ the least useful men and the worst shots for this especial duty.

I think these horses would be able to keep touch with the unit wherever it went, and in the evening or at the close of the day's march the baggage could be redistributed.

The horses as the men in charge of them would not have the same power of defence as the combatant part of the regiment might with advantage be taught to lie down so as not to expose themselves to view unnecessarily.

Of course many will say for horses with baggage on their backs lying down would be out of the question, but I think not, provided we used the right kind of pack-saddle, and this, I think, is the Panthay saddle.

This saddle weighs 26 lbs. and is made in two pieces, the upper part fixing on to the lower: the baggage is placed on either side of the upper part and putting it on or taking it off does not occupy a minute. The saddle is kept on the back merely by the weight in Burma, no girths at all are used with it and it never falls off which is a decided advantage, as there can be no girth galls which are so often a perfect curse to transport.

One might go a long way before finding such a practical kind of pack saddle, and it is worthy of being introduced at least into native cavalry regiments.

I should have said above that the 80 horses required per regiment would not necessarily have to be kept up by every cavalry regiment. They might be kept up only by the regiments on the mobilisation scheme, or if kept up in part by every regiment, then some 20 per regiment would be sufficient.

The system I have suggested of reducing the present burden of troop-horses would almost certainly have some disadvantages at first, and the method of employment would no doubt require perfecting.

I have merely given the rough idea, but if some regiment were given a chance of experimenting through a manœuvre season with a few "casters," I think my proposal might be found a practical one.

No doubt alterations would be found necessary and difficulties would present themselves, but I do not think they would be very serious ones, and it would be the work and object of the regiment experimenting to try by some means or other to overcome them. In fact, the matter may be summed up in the few words "nothing venture, nothing have."

For "the eyes and ears of the army" we certainly require light cavalry possessing the greatest possible mobility, and if we are to have in future, as so many have with reason advocated, a smaller and more natural breed of troop-horse, we must first find some method of reducing the present excessive dead weight that is carried, and the sooner the method is arrived at the better both for ourselves and for our

THE CHINESE LANGUAGE.

BY LIEUTENANT C. L. PEART, 9TH MADRAS INFANTRY.

"It is notified that with the sanction of the Secretary of State for India, the Government of India have decided to institute an examination in the Chinese language, with a view to encourage the study of that language among officers of the Army in India."

The above extract from India Army Circulars, 1898, and the despatch of troops to China serve as an apologia for the presentation of an article on a language in the pages of a Military Journal.

It also forms an external and practical reason why attention should be turned to the study of a language which otherwise possesses many interests for men in general, perhaps more than any other language, ancient or modern. It seems always to have been the language spoken by the largest number of human beings on the face of the earth—a number variously estimated at from three to four hundred millions or one-fifth of the population of the world. It is the most ancient language now spoken and its written language is contemporaneous with the Egyptian or cuneiform which are among the oldest written languages known to man. The conservatism of the Chinese is nowhere more strongly marked than in their language, which has undergone none but the smallest changes in the course of many centuries: in fact, there is nothing to show that it was not the same 2,000 years ago as it is now. To the philologist it is thus a language of the utmost importance. It occupies a position in philology—as the foundation stone of that science—to be compared with that of the Azoic or Archæan formation in geology. Max Müller speaks of the importance of its enormous literature by the material which it supplies to the student of ancient religions and likewise to the historian who wishes to observe the earliest rise of the principal sciences and arts in countries beyond the influence 'of Aryan and Semitic civilization' and 'of the important evidence which the Chinese language, reflecting like a never failing photograph, the earliest workings of the human mind, is able to supply to the psychologist and the careful analyser of the elements and laws of thought.'

The Chinese language is the subject of a strange paradox; it is the simplest language perhaps that exists and is at the same time universally acknowledged to be the most difficult to master among the better known languages.

The authority quoted above speaks of it as showing 'the marvellous simplicity of the original warp of the human speech' and again alludes to it as 'child's play,' giving as an example the Chinese rendering of such a sentence as 'the king rules men legally,' 'king

rule man heap law instrument.' On the other hand, a close observer has not hesitated to say 'that the Chinese language requires the age of Methusalah to overtake it' and a distinguished scholar alluding to its difficulty dubs it 'this most unhappy language.' Foreigners who can unassisted write the language can be counted on the fingers of the hand, nor is twenty years considered an extravagant period of time to devote to its study.

An attempt to point out what the peculiar characteristics of the language are that cause such seemingly contradictory statements will also serve the purpose of acquainting the reader with the main points of this strange form of human speech.

With regard to its simplicity—

- (a) Every word in the language is a monosyllable.
- (b) Hence there are only some 460 possible monosyllables to be learnt.
- (c) It has neither number nor case nor gender with regard to nouns, nor tense nor mood nor person with regard to verbs. Nor is it possible to make these distinctions by means of prefixes, or suffixes, for these do not exist.
- (d) Therefore the same word without change of form may be used as a noun, a verb, an adjective, an adverb, or a particle.

The result is to be seen in the following literal translation of a Chinese passport: 'Consul says now is two official accompanied soldier three mango to—here insert name of locality—walk ask give protection official guard town village all in general respectable visit draw there is no obstacle,' the rendering of which in English would be something as follows: 'The Consul announces the arrival of two officials, accompanied by a soldier, three persons in all, going to the following localities, I beg every one, functionaries, town and country officials, to be respectful, to protect them and not to hinder their going about, drawing, etc.'

Turning to view the other side of the question, we find that its very simplicity is the cause of its great difficulty. Since the number of words in the most ordinary use are somewhere between three and four thousand (a Chinese newspaper has a fount of 6,000) and the number of possible monosyllabic combinations only 460, there must be some way of increasing the number of sounds to enable words to be distinguished the one from the other.

This is accordingly done by giving every monosyllable four different tones—that is, in Pekingese, in some other dialects there are as many as seven. Sir Thomas Wade illustrates them (as far as this is possible without having them actually spoken to one) by the following: 'Let A,B,C,D be four persons engaged in conversation and a question be put by B as to the fate of some one known to all. In the four lines below I have supposed A to assert his death in the 1st tone, B to express his apprehension that he has been killed in the 2nd, C to

second this suspicion in the 3rd, and D to confirm it sorrowfully in the 4th :—

A. Dead.

B. Killed?

C. No!

D. Yes!

Another writer, illustrating the use of two of the tones, says "the Chinese for 'saddle the horse' is 'Pi (pronounced pay) ma.' But if you 'Pay ma' in your natural voice, as if you wanted a debt made over to your maternal parent, no one would understand you. You must say it surlily 'Pay ma' with a complaining stress on the Ma as if some one had been plaguing you to let him pay Pa and you insisted on his paying Ma. Then only would your servant understand."*

The reader can readily imagine the impediment caused to fluency in speaking by the observance of these tones. It takes a month or two, in the first instance, to train the ear to recognize that there is a difference when the tones are pronounced by a native even with the greatest emphasis and yet they are of the utmost importance, for instance, 'fang' tone 1 means 'soup,' 'fang' tone 2 means 'sugar'; 'yeu' tone 1 is 'tobacco,' 'yeu' tone 2 is 'salt'; besides these obviously easily mistakeable meanings 'yeu' in tone 1 possesses 24 other meanings, tone 2, 35; 39 in tone 3 and 40 in tone 4; among these are to be found the equivalents for such words as the following: eye, opium, smoke, why, how, a woman's smile, the bank of a stream, to delay, a eunuch, to cook, to pickle, good tempered, a cliff, a word, colour, a fence, a banquet, elegant, hot, to stretch, to drill, the eaves of a roof, a wild goose, etc., etc.; luckily, however, all these are not in every day use and besides are often combined with other words which facilitate the recognizing of them. On the other hand, these are sounds tang, pei, chi, etc., the initial letters of which are pronounced somewhat between a 'd' and a 't', a 'b' and a 'p', a 'ch' and a 'g', respectively, as opposed to the plain 't' of 'tang', 'p' of 'pei', 'ch' of 'chi'. These minute, though important, distinctions go to add greater confusion to the already numerous tones of 'tang', etc., by itself furnishing a like number. The 'yeu' given above is a sound that has a very moderate number of meanings; 'chi' in a small dictionary treats of over 160 in its different tones, while 'chi' possesses a still greater number.

With regard to (c), though certainly simplifying matters by giving no declensions and no conjugations of irregular verbs, etc., still it requires the most careful placing of words in a sentence and recourse to many child-like contrivances to indicate when one and the same word is a noun and when a verb, etc., and whether the future or the past is meant to be expressed.

*The above is rather spoilt, however, by the fact that 'Pei' is not pronounced 'pay,' but much more like 'bay.'

These are some of the difficulties that make Chinese anything but an easy language in which to even converse well; the written language presents still greater obstacles. It is destitute of an alphabet; every word is represented by a symbol or character having only the slightest connection with any other and must be learnt one by one by sheer memory. Archdeacon Moule describing a Chinese school says 'little red squares with characters written on them are dealt out day by day to the scholars. They are pronounced by the master and the boys then gaze at them and shout at them by the hour.' Some of these characters have as many as 30 dots and strokes.

Thus from one cause or another the language comes to labour under various disadvantages. It is further particularly indefinite and loose in the meanings of its sentence, more especially in the denoting of time. It is not considered the proper thing in writing to use stops or punctuations that might in any way assist the reader. Divisions into paragraphs is unknown, nor do the names of men or places have any signs by which they might be distinguished from other ordinary words from which indeed they are taken. It is further a most intractable language, that is, it is impossible to study other languages through its medium, for it is incapable of expressing the sound of half of the ordinary words contained in foreign languages—thus the nearest possible approach to the word 'Transvaal' is 'Tê lau shih wo êrh.' All foreign firms and shops have to adopt a Chinese 'style' by which they are known and foreigners require to be re-christened, as their own names are impossible to the natives. On the other hand, let it be said of its written language that it possesses all the brevity of sentences and wealth of meaning in words that go to make Latin so expressive a medium of thought.

Going still further afield we are confronted with the different kinds of languages that exist which, with the exception perhaps of the first mentioned below, must be mastered before any claim to real proficiency can be made. There is the language of the ancient classics and the more modern language; there is the language of official documents and the epistolary language; all of which differ in no small degree from the spoken language which again possesses numerous dialects, differing so widely from one another that Chinamen from one province cannot understand those from another and not unfrequently—in the treaty ports more especially—have recourse to pidgin English for their mutual comprehension. A peculiarity of these dialects, however, is that their difference lies solely in the fact that different sounds and tones are given to the characters. The written language is the same all over the Empire; indeed educated Coreans, Japanese, and Chinese can eke out one another's meanings by writing the characters, though their languages are otherwise widely different. A bright side, however, presents itself when we consider that one of these dialects, *vis.*, Pekinguese, which is practically what is known as Kuan Hwa or the Mandarin dialect, is the official language recognized throughout the Empire and is known at least to every Mandarin.

A SIMPLE METHOD OF TRAINING IN MEDICAL FIELD SERVICES.

BY MAJOR C. H. MELVILLE, R.A.M.C.

It is not, I presume, necessary to enter into any detailed argument to show the advisability of training the medical department of the army in time of peace in the performance of those duties which it will have to carry out in time of war. The practical question, however, of how such training is to be carried out is beset with considerable difficulties. There are, it is true, two ways at least in which it might be done.

1. At general manœuvres. If all troops taking part in manœuvres could be completely furnished with the medical establishment, equipment, and transport, including those for field hospitals, as laid down for field service in the Field Service Code, and if casualties could be practised at manœuvres in such a manner as regards time and place of occurrence, and in such proportions as to sufficiently closely resemble the realities of war, then no doubt the training of the medical services could be made an integral part of general manœuvres. The great difficulty of course is the expense: the cost of the concentration of the additional medical establishment and equipment and of the up-keep of the necessary additional transport would (in the case of any large number of troops) amount to so large a sum as to cripple in all probability the usefulness of the manœuvres in other directions.

This method is also no doubt open to objection from a purely military point of view. General manœuvres are intended to teach the troops engaged the art of working together in larger bodies than are available at ordinary times. If we complicate the problems set before them by adding these to the inevitable confusion resulting from casualties, calculated in a proportion sufficiently resembling the reality of a serious engagement, the result may be that in trying to teach two things at once, the combatant arms how to take life and the medical department how to save it, we shall only confound two simple lessons and teach neither anything useful. This is perhaps the reason why we do not find foreign nations, as a rule, adopting this method of training.

2. Special manœuvres with small bodies of troops or skeleton forces may be instituted with the view solely to instruct the medical department. Certain simple manœuvres, *e.g.*, the formal attack, ever varying ground, a rear-guard action, and so on, being practised. This appears to be the plan followed in the German and French Armies, the former devoting seven, the latter a smaller number of days to the purpose. This plan, though probably the best in countries such as the above where garrisons are large and distances small, and where local concentrations of medical establishment are easily carried out, is not equally applicable to a country like India where distances are so great. Expense in fact again bars the way.

I would therefore suggest, by way of compromise, a plan which, while entailing no extra expense to Government, would yet permit of

the medical establishments of all but the smallest stations being practised in field work: that is, in the work of the advanced lines of medical assistance. In the field hospitals and on the lines of communication the work to be done is mostly work to which the establishments are well accustomed, though carried out no doubt under conditions which are new and strange: at the very front not only the conditions, but the work also, are new, and it is here therefore that practice is most needed.

To illustrate my plan I will take as a concrete example a station which I know well, and which has a typical small mixed garrison, *viz.*, Nasirabad. The garrison consists of Cavalry: 1 squadron, Bombay Cavalry: Artillery: 1 Field Battery, Infantry: 6 companies, British Infantry and the Head-quarters wing of a Native Infantry Regiment. The medical establishment consists of: medical officers 4 (3 R.A.M.C. and 1 I.M.S.), assistant surgeons 4, hospital assistants 4, ward servants, bhistis, etc., according to scale. Medical field equipment: 3 pairs field medical panniers, 3 field medical companions with water-bottles, 3 surgical havresacks. Ambulance transport: 12 stretcher bearers from the British Infantry, 8 from the Native Infantry, 2 from the Field Battery—in all 22 with 6 stretchers, 6 dhoolies, and 3 or 4 ambulance tongas.

Now with the above garrison there would be no difficulty in providing two skeleton forces, one to hold a marked position and the other to attack it. The defending force should of the two be the less imaginary, as the absence of any obvious fire from the enemy would tend to make the proceedings too unreal. The attacking force should be of the strength of a brigade of three regiments. Of these only one should furnish casualties. Taking the imaginary strength of this regiment at 800 and casualties at 10 per cent., 80 men should be told off to act as "casualties." The whole of the regiment should be in the first line of the attack and the casualties divided among the three parts of that line, *viz.*, firing line, supports, and reserves, in such manner as the officer commanding may direct. Each "casualty" must be beforehand provided with a ticket marked with some injury or other: a certain proportion being told off as "dead" and some having marked on their tickets (in addition to the name of the injury) "slight able to walk." The collecting and dressing stations having been fixed on by the commanding officer and subordinate medical officer in conjunction, the medical establishment must then be told off as follows, keeping as close as possible to the scale laid down by regulations.

Regimental: 1 medical officer, 1 assistant surgeon or hospital assistant, 1 ward servant with field medical companion and water-bottle; 16 stretcher bearers with 4 stretchers and a surgical havresack and 2 dhoolies. One pair field medical panniers on a mule.

Collecting station: 1 assistant surgeon and 1 hospital assistant, 1 ward servant, 1 water-carrier, 1 field medical companion, 1 surgical havresack, and a reserve of ordinary dressings, to be supplied from station hospital. (Expensive material of course will not be used, simple tow and coarse bandage cloth will be all that is necessary.)

Dressing station: 2 medical officers, 1 assistant surgeon, 2 hospital assistants (1 medical subordinate of each class will of course have

remained in cantonments). Ward servants, bhistis, and cooks, as they can be spared from cantonment duties. Two stretcher bearers from Royal Artillery to be available as sick attendants or as escorts for ambulance tongas.

Equipment: 2 pairs field medical panniers, 1 field medical companion, 1 havresack. Ambulance transport: 1 stretcher with 4 bearers, 4 dhoolies, and 4 ambulance tongas. It will be seen that in the above sketch the only deficiency is in transport at the dressing station and in equipment of a minor nature at the same. I will show later how the former difficulty can be met; and the latter is of comparatively slight importance, as any want of simple dressings can be easily supplied from the station or native field hospitals. Such dressings will practically consist of bandage cloth and tow and these need not be wasted, as they can be washed or disinfected and used again. The 2 field hospital boxes, Nos. 6 and 7, may be represented if convenient by the field fracture box of the station hospital. It must be remembered too that as we are only working from one regiment of a brigade the dressing station is only doing $\frac{1}{3}$ rd of the work it might be called on to do. It may therefore be considered well equipped on the whole.

The practice will now be carried out as follows. The brigade advances to the attack, the regimental establishment following it in accordance with paragraphs 58 to 60 of the Field Medical Code. The wounded will be ordered to fall out by an officer (not medical) specially detailed for the duty, who will be instructed to make the incidence of casualties as realistic as possible in view of the range and strength of the enemy's fire. The "casualties" will be marched (in field service marching order) widely extended in the lines they belong to. On casualties occurring the medical officer will immediately attend to them and give his orders to the stretcher or dhoolie bearers, men marked "able to walk" will be ordered to find their way back to the collecting station on foot. A triangular bandage and a pad of tow to represent a first field dressing may with advantage be served out to each casualty before the action. The medical officer will make use of such cover, undulations of ground, etc., as may present themselves to save his bearers from undue exposure.

The collecting station and dressing stations will establish themselves as soon as the brigade has passed the positions allotted to them and the transport of the latter excepting tongas will be assembled at the former. The deficiency of transport at this stage will probably be best met by forming an ambulance relay post between the two stations, due regard being had to shelter and facility of access. The medical subordinates at the collecting station will perform their duties as laid down in the Code, each alternately accompanying the wounded to the relay station. For this purpose the available stretcher and dhoolies can be divided into two convoys, one of which will always be *en route*, and the other waiting at the collecting station. The wounded having been transferred to the tongas at the relay station, the tongas will be escorted by one of the two available stretcher bearers detailed for the dressing station to that station. There will probably be some difficulty in controlling the flow of wounded to the rear

owing to inequality of transport facilities, but a little management should set this straight. It might be necessary to take a dhoolie from the regimental transport to work back from the collecting station to the ambulance relay: or if the enemy were supposed not to possess modern artillery, all the manual transport might work in front of the collecting station, and the tongas back from there to the dressing station. These details must be arranged by the subordinate medical officer, having a view to the relative distances to be traversed from the front to the collecting station and from the collecting station to the dressing station, together with the comparative rate of travelling and carrying capacity of tongas, stretchers, and dhoolies. For instance, if the distance from the front to the collecting station is equal to that from the collecting station to the dressing station and if the rates of travel of a tonga and a dhoolie and a stretcher be identical; then as the carrying capacity of a tonga is three times that of a stretcher or dhoolie (a tonga carries 4 sitting or 2 lying down, average 3), the four available tongas may be considered as equivalent to 12 dhoolies or stretchers; all the hand transport can then be used in advance of the collecting station. On the other hand, if the distance from the collecting station to the dressing station be half as long again as that from the front to the collecting station, then 4 tongas will only be equivalent to 8 stretchers or dhoolies, or if a tonga travel twice as fast as a dhoolie or stretcher, then the distances being equal 2 tongas only will be necessary to prevent an accumulation of wounded at the collecting station. Of course the matter could never on the ground be settled so simply as above. It is probably here in fact that practice in time of peace would be particularly useful to the medical officer, teaching him how best to get the greatest value out of transport at his disposal. This only practice, and practice under varying conditions of soil and locality, can teach. The other lessons that might be learnt from the above practice are: the choice of collecting and dressing stations; the capabilities of stretchers and stretcher bearers in this climate, how fast they can travel, how long a detachment can work continuously, and how many wounded men it may be expected to bring in before being exhausted: for stretcher bearers the best ways of negotiating bad and difficult ground, the best ways of keeping under cover, and utilizing undulations and dips in the ground for this purpose. It would also teach medical officers the best ways of regulating the work of dressing and collecting stations. If possible, the attack as above should be practised on three separate days, choosing different ground each time; medical officers and subordinates could thus see the work of the different lines of assistance more thoroughly. A fourth day, for which no troops would be necessary, could be devoted to practising dressing station work. "Casualties" would be necessary as before. All the hand transport could be used between the collecting station (where the "casualties" ready ticketed could be fallen in) and the dressing station and the tongas used for emptying the dressing station. Attention could on this day be paid to the arrangement of the wounded in classes on arrival at the dressing station—a system undoubtedly necessary to cope with any large influx of wounded. This practice might be repeated against time to represent a retreat,

the dressing station being closed and moved back, and the wounded evacuated to the rear in the best manner possible. If a little money could be spared, ordinary country carts could be hired and improvised methods of slinging stretchers on the Norwegian or Terraine systems practised. The expense would be trifling. Only common stores, bamboos, country ropes, etc., such as might be available in any village, should be used. Two other practices of great importance might also be gone through, *viz.*, searching for wounded at night and loading of railway carriages or waggons arranged on some improvised system, *e.g.*, the Zavodovski. This, however, would mean extra expense. The loading of the ordinary second class carriage with helpless patients, however, is a matter in which practice is not without its advantages.

My object in writing this paper is merely to indicate one way in which even in comparatively small stations a good deal can be done towards practising in time of peace those duties which will be demanded of us in war, without extra expense and without much trouble. In large stations of course much more might be managed.

At the close of such a series of practices as I have described above, a detailed report should be submitted by the subordinate medical officer to the commanding officer, giving particulars of the work done and of the observations made, regarding speed and efficacy of the different means of transport, over different kinds of ground and under varying conditions of weather, any other points of importance that may occur should also of course be noted.

UNIFORM AND EQUIPMENT.

BY MAJOR E. J. MEDLEY, 17TH BENGAL LANCERS.

It is to be hoped that our experiences in South Africa and China will lead to some very radical changes in our uniform and equipment, and as "in a multitude of counsellors there is wisdom," I venture to note on a few points as a small contribution to the inevitable official discussion of the whole subject after the termination of the present wars.

Head gear.

It appears probable that one of the first matters to be settled will be the difficult one of the most suitable head-dress. Too long has the absurd caricature of the "Pickel-Haube" been the English soldier's full head-dress. The Indian helmet, which was merely an adaptation to the exigencies of the Indian climate of the English black helmet, is, if possible, worse even than its god-parent. Ill-fitting, uncomfortable, impossible to shoot in, affording no protection to either eyes, temples, or back of the head, the marvel is that it has not been replaced long ago by a more suitable head-covering.

An attempt was recently made in the Soudan to evolve a better pattern of sun-helmet, and certainly the Soudan helmet is a great improvement in every way on its Indian brother.

Even the former, however, does not afford sufficient protection from the Asiatic sun, and there is no reason to suppose that if the present Indian helmet were replaced by the Soudan pattern, it would not again be necessary as in the Chitral campaign to put the British soldier into a large solar topi.

Everyone will agree doubtless that the Indian military helmet is an absurd head gear for a severe winter, whether in Afghanistan, Tirah or Peking; and bold, not to say reckless, indeed would be the man who would venture to appear on parade in such a head-dress with the thermometer at zero (F.).

It would appear then that the present style of helmet is useless as a protection either against a powerful sun or against great cold.

Is it then necessary for the ordinary Indian cold weather, or for the hot weather in the hills, which are the two sorts of climate in which the Britisher is called upon to manœuvre in India in peace time?

This sort of climate may be looked upon as almost the counterpart of the manœuvre weather in England. Consequently what will do for England would also do for ordinary wear in India.

Would it not then be better to recognise the fact that the present Indian helmet is an absurdity all round? A head-dress that is useless in extreme heat or extreme cold, and unnecessarily sun-protective in the ordinary Indian drill season, would seem to be an article requiring abolition as soon as possible.

What then is to take its place?

It appears highly probable that the present English helmet will be replaced by some form of soft felt Wideawake, or a canvas "Baden-Powell." This would be as suitable for wear in the Indian cold weather as in the English summer; in fact, for all but the very hot or the very cold weather.

For the former we must recognise the fact that nothing short of a good thick, stout pith hat can afford the European the necessary protection from the hot Asiatic sun. The most convenient from a military point of view, "solar topi" must then be chosen and issued specially as required.

For protection against real cold there is nothing to equal the "bashlyk" or camel's hair cowl that is worn by all ranks of the Russian army.

The Indian troops who saw it for the first time on the Afghan Boundary Commission were unanimous in praise of it, and there is not much doubt that our troops, whether British or Indian, who have to winter in North China, will universally adopt it either officially or unofficially.

This "bashlyk" worn when necessary pulled over the ordinary Wideawake will answer all requirements as a winter head-dress.

Instead of the various sorts of useless forage caps kept up by all ranks at present, I would recommend a round topped soft cloth or serge cap, with a peak in front, and ear pieces at the sides. These latter to fasten on the top of the cap when not required, or under the chin for intense cold. A worked (not metal) badge, with a $\frac{1}{2}$ -inch stripe of the colour of the facings round the cap, would serve both as ornament and as a distinctive mark. A similar distinction and ornament could be worn on the Wideawake and the Pith hat.

If all the above hats were made of a dark brown colour for all ranks and all branches of the service, there is no reason why the same head-dress should not serve for both peace and for war.

British officers with Indian native troops should wear the same head-dress as their men, and this should be the "lungi," whether in the cavalry or in any of the other branches of the service. With a properly ventilated "kulla," and with a peak, fastened under the folds of the "lungi," for protection against the glare, this head-dress would be ample in the hottest sun; while for the winter all ranks would wear the "bashlyk."

Body gear.

It is highly probable that the present much-buttoned, tight fitting short coat will be replaced by a more workmanlike and more serviceable garment. When we find both officers and men smearing over their buttons with mud in order to make themselves less dazzling, it augurs something wrong somewhere. To choose "khaki" for invisibility, and then to plaster it all over with numberless shiny buttons, would seem to be against the dictates of common sense.

I have never been able to understand the reason for the adoption of "drill" as a material for uniform. It has every possible disadvantage that can be combined in one material. In the hot weather it is hot, and in the cold weather it is cold. No air can get through it in the summer, while it absorbs any moisture there is in the air. I believe it is one of the most fruitful causes of pneumonia and fever.

Its sole recommendation, as far as I can discover, is that it will wash, and it is comparatively cheap. As regards the former, as all reports from South Africa and China show, water when found at all is far too precious for it to be used for washing clothes in often. As

regards the cheapness, there are actually many other materials far cheaper, "dasooti" for instance, while if the mischief caused by wearing "drill" is taken into consideration, it would seem to be the most expensive material it is possible to choose. The troops that went out to South Africa all went clothed in drill, but when winter was approaching, a universal cry went up for "serge." Surely a double set of uniform, necessitated as it is by the wearing of "drill," is not a serviceable proceeding.

Again, why is it that among Englishmen it is deemed essential to wear "flannel next the skin"; or, in other words, to wear woollen undergarments? Personally I look upon this as not only a most dirty habit, but also a most unhealthy one. No other nation or people in the whole world does such a thing. Can we be right and all the rest of the world wrong? Wool next the skin induces perspiration in the summer, and is the direct cause of prickly heat; in fact, it acts like a "kuskus tatti." The state of body of poor Thomas Atkins, forced to wear a flannel shirt and a thick woollen cholera belt during the Indian hot weather, can be better imagined than described. Far healthier would it be in every way to wear cotton (not linen) undergarments and woollen over-garments. Then if it is necessary on account of heat to discard clothing for a time, or on account of cold to put on additional garments, it is perfectly simple to do so; under the present arrangement this is impossible, as the warm garment is underneath all the other clothing.

I strongly advocate then that all under-garments should be of cotton (or silk for those who can afford the luxury), while the over-garments should invariably, whether in summer or in winter, be of serge.

Next as regards the shape of the uniform coat. This should, I think, be either in the form of a blouse, like that worn by the Indian cavalry, but slightly shorter for the infantry, say reaching to about 4 inches above the knee, or else like the old Indian cavalry "Alkhalik," a blouse shaped coat, but with the opening down the front and back instead of at the side; a sort of single-breasted frock coat in fact, but without the regular frock coat tail. It goes without saying that whichever of these two garments is chosen should be perfectly loose, and with plenty of pockets. The fastening down the front should be with buttons, concealed behind a broad fly. It might be drawn in at the waist if preferred.

The present cumbersome great-coat should be abolished, and its place be taken by the blanket cloak, as used in the Cossack Cavalry regiments, and in Texas, and lately introduced to the English public by Mr. Stohwasser.

This admirable garment serves as cloak, blanket, and tent; is perfectly waterproof; being worn over all accoutrements, protects the man and the whole of his uniform, and, if necessary, can be suddenly thrown off, a great advantage to a sentry suddenly surprised.

Leg and foot gear.

Knickerbocker breeches to lace below the knee instead of to button, and with plenty of room above the knee, with long stockings,

and boots and spats are, I think, a better working dress in every way than the present close fitting trousers and putties for the rank and file, while the now universally worn Stohwasser gaiter would sufficiently distinguish the officer.

The idea is prevalent among Englishmen that lace boots are the only possible foot gear for walking and marching. The German foot soldier invariably marches in Wellingtons, while throughout the length and breadth of Russia no one, whether soldier, or civilian, walks in anything but soft leather, jacked round the ankles (concertina-shaped), long boots. Quite recently, too, attention has been directed to the excellent shoes in which the Spanish infantry invariably march.² These examples would serve to show that the lace boot is not a *sine quâ non* for the soldier. I would also call attention to the very excellent ankle boots made to buckle instead of to lace invented by Mr. Southall of London.

Hand gear.

The following remarks refer chiefly to officers:—

In place of the present gloves, whether brown or white, I would advocate the universal adoption whether for peace or war of gauntlets.

For service, where officers have to be constantly drawing gauntlets on and off for sketching or writing reports, etc., a brown gauntlet with rein deer gloves attached to the gauntlet. If worn some six sizes larger than the ordinary kid glove will be found hard to beat. The method adopted in some regiments of having the glove part separate from the gauntlet part has nothing to recommend it. The fewer buttons one has to do with on service the better; and with a large sized gauntlet it is perfectly easy to manipulate either sword or pistol.

Uniform in general.

In the above few remarks I have referred chiefly to the service kit, but there is likewise great room for improvement in the peace uniform. A general simplification all round combined with a very great reduction in the number of garments to be maintained, especially by an officer, are reforms greatly desired. A blue frock coat, a serge jacket, and a drab service coat would seem to answer every purpose for which it is necessary to wear uniform; while for hot weather in tropical countries like India a few white light serge or "dasooti" or thin Cashmere coats would amply suffice. The abolition of the tunic, the stable or mess jacket (than which surely nothing more indecent was ever seen) and the patrol jacket would probably be regretted by no one but the tailor, and he, after all, is the last person to be consulted in the matter, instead of the first as has hitherto been the case. It has frequently been urged against the British officer that he wears his uniform as little as possible. Is this to be wondered at, however, when his comfort and his pocket are the last matters to be considered? At the beginning of the 19th century, when British officers wore uniform almost as invariably as the continental officer of the present day, the frock coat was the almost universal military wear, and surely no smarter or handsomer military coat could be devised. If it

was re-introduced and the wearing of it carried with it as many privileges as obtains throughout Europe, the British officer would be seen more frequently in uniform than he is at present.

Equipment.

There can be little doubt that the South African war has sounded the death knell among many other things of black leather accoutrements ; also of ammunition pouches, whether black or brown. The disadvantages of these have frequently been noticed, but it needs the test of war to bring about reforms, and six months of a campaign will do more for the army than six years' efforts in peace of reformers.

Soft brown leather or web bandoliers will take the place of the cumbersome pouches, while belts of the same material will replace the heavy " equipment " for carrying the blanket cloak and the aluminium canteen.

General remarks.

In the above few notes I have advocated nothing new. At one time or another for many years now attention has been drawn to the absurdities still in existence in connection with our uniform and equipment, and the time would at last seem to have arrived when some radical change must take place, and so-called smartness must yield to common-sense. No word in the English language has been so prostituted in its real meaning as this word " smartness." Perhaps the Boers having taught us the meaning of the word " slimness," we shall now adopt the latter to mean what " smartness " used to and should still mean.

SOME FOREIGN ARTICLES OF SPECIAL INTEREST.

(Contributed by the Intelligence Branch.)

A GERMAN VIEW OF THE FIGHTING RACES OF THE INDIAN ARMY.

BY LIEUTENANT VON STUMM.

Translated from the "Militär Wochenblatt".

The native soldier of India is devoted to all forms of sport. The infantryman is passionately fond of wrestling and takes part in all English games, such as cricket, football, etc. They are nearly all keen sportsmen, more particularly the Gurkhas. The cavalryman devotes himself to different mounted sword and lance exercises, of which the principal are tent-pegging and lemon-cutting. A by no means unimportant result of all these different forms of sport is the bringing together of the officers and men, who consequently get to know one another better and also the increased influence of the officers with their men.

The native army is recruited from those races in which the military instinct is most predominant. It may here be noted that the northern races are more martial than those in the south, and those from the hills are superior to those dwelling in the plains.

Owing to the great number of martial races, it is impossible for me to describe them all, and I will confine myself to those who, on account of their numbers or especial military qualities, play an important rôle in the army. The following are the principal races or *castes*, from which the Indian army is recruited:—

Northern India: Brahmans and Rajputs.

Eastern Punjab and North-Eastern Rajputana: Jats and Gujars.

Punjab: Sikhs, Dogras.

Western India: Mahrattas, Mers, Mhairs, Meenas, Bhils.

Hill races: Gurkhas, Garhwalis.

Mahomedan races: Afghans and Pathans, Baluchis and Brahuïs. Mahomedans from the Punjab, Hindustan, Rajputana, Madras, Bombay, and the Deccan.

It would be difficult to particularise anyone of the above races as being the best from a military point of view, each one having its own peculiar qualities, and so varied is the opinion of British officers with regard to them, I shall therefore give a short description of the best races comprising the native army, and more especially of those which have rendered faithful service to Great Britain.

Gurkhas.

The Indian army has 121 companies composed of this excellent and martial mountain race. The Gurkha hails from Nepaul, situated in the southern portion of the Central Himalayas, and is a mixture

of the Mongolian and Aryan and is typical of the former by his short and sturdy build. The principal attribute of the Gurkha is his phlegmatic character, and it is perhaps partly owing to this that he is such an excellent soldier; for undoubtedly a cool and calculating head is of the greatest service in the heat of battle.

The Gurkha resembles the Englishman in his *sang-froid* and tenacity: in both of them it is inborn and is not acquired. The history of the Indian army is full of their brilliant feats of arms. Although he does not, perhaps, possess the élan of the Pathan, still his imperturbable *sang-froid* and endurance in all the varying phases of war are of great value. He has not that fault of conceit, of misconceived self-consciousness, which from a military point of view spoils so many of the warlike races of India. He is of a happy disposition, enjoys the lighter side of life, whilst the darker does not depress him: he endures all the privations and vicissitudes of a campaign with the greatest good humour.

His short and muscular stature, his sharp eye and ear, his innate passion and aptitude for wood-craft, give him all the qualifications for an excellent soldier in mountain warfare. In Assam and Burmah his ability to find his way through the thick jungle proved of unparalleled value. The deeds of the "little Gurkhas" in the campaign on the North-West Frontier have gained for them great and well merited praise.

Sikhs.

The excellent military qualities which the English recognised in the Sikhs as a foe were put to good account after the subjugation of the Punjab. In 1846 two Sikh regiments, now the 14th and 15th Sikh regiments, were raised in Ferozepore and Ludhiana: a few years later a third regiment, now the 45th Sikhs, was raised. In addition, an order was issued to enroll 200 Sikhs per battalion, but owing to the slack state of discipline then prevalent, this was never done, and this omission was bitterly rued at the outbreak of the mutiny. In 1847 the Corps of Guides and the Punjab Frontier Force, which contained a large percentage of Sikhs, were raised.

On the outbreak of the mutiny and when the spectre of another Mogul dynasty appeared before the eyes of the Sikhs, hundreds of them, who had long since changed the sword for the ploughshare, streamed to Lahore and entered the ranks of the regiments raised by Lord Lawrence. All these men were full of a deadly hatred for the Hindu soldiery and were animated by the wish to revenge themselves on their enemies of centuries standing. It thus came about that a people, who eight years before had been fighting against England, took up arms in her cause with a zeal and devotion, which has no parallel in history. Since the mutiny the Sikhs have formed a considerable and valuable portion of the army, and their deeds in all the campaigns of this half century have covered them with glory. They have served in China, Abyssinia, Afghanistan, Egypt, and Burmah.

As a soldier, the Sikh is quiet, has great *sang-froid* and a determined courage, and is not so inclined to lose his head in action as some other races are, which is the result of the self-control he exercises in the

vicissitudes of every-day life. As a man, he is one of the finest types in Asia. He is proud, without being overbearing. His character is firm and determined, and free from those many prejudices, which are so prevalent in a country such as India. His self-esteem commands respect. He is a soldier by instinct and tradition. Cowardice is to him worse than a crime. In short, the Sikh with all those attributes and an imposing personal appearance may be considered as belonging to one of the finest oriental races. There are 84 companies composed of this excellent warlike material.

Dogras.

The Dogras are a mountain race, of Rajput extraction. The Dogra is of a shy and retiring disposition, but possesses at the same time strength of character. He has not the dash of the Sikh or Pathan, but, on the other hand, he has a highly developed sense of his self-respect and of what he calls his honour, and these qualities all tend to make him a good soldier. He is very amenable to law and discipline, and although he is subject to the prejudices of his race, yet he is easy to handle, both in quarters and in the field, and is ready to shake off all prejudices when the exigencies of active service demand it. Of a simple and happy disposition, he is at the same time superstitious: he has a deep sense of loyalty and to be true to his salt is with him almost a part of his creed: he is incapable of treachery and has consequently the reputation of being in every way a trustworthy soldier.

In build he is not so big as the Sikh, nor as muscular as the Gurkha. He is of middle height and lightly built, but extremely hard and wiry. In mountain climbing and endurance on the march he is the equal of the Gurkha and Pathan. The appearance of a Dogra regiment would satisfy the most severe military critic. There are 52 companies of Dogras in the army.

Rajputs.

The Rajputs are of Aryan origin and hailing originally from Central Asia, emigrated to India in the year 2000 B. C. and settled in the Punjab: they form a feudal military aristocracy and are very jealous of any insult and of the honour of their women kind. Lord Clive was the first to raise a regiment of Rajputs, which did good service at the battle of Plassey and in many successive campaigns. The army, with which Lord Lake conquered the Mahrattas, was composed mainly of Rajputs, and they also took part in the conquest of Arakan and Java and in the Nepaul and Afghanistan wars of 1838 and 1842. They also rendered good service against the Sikhs in the conquest of the Punjab. They have taken part in every campaign since the mutiny, including China, Egypt, Afghanistan, and Burmah.

Although the Rajput is not the man he was, yet he is undoubtedly still a good soldier. The less unmixed his descent, the better man he is. He has one great failing, he does not bear up under reverses in the way a soldier should. He is brave, and as long as things are going well, he will go where he is ordered and death has no terrors

for him, and he is ready to undertake any desperate deed. The failing which I have mentioned does not prevent the Government from recruiting largely among them, as there are 92 companies composed of this race.

Pathans.

The Pathan tribes, among which are the Afridis, Waziris, Orakzais, and Mohmands, are mixed races of Afghan, Scythian, Turkish, Persian and Indian origin and profess the Mahomedan faith. There are over a million men belonging to these wild races, subject to the British Government, and there are probably another million of them across the frontier. Of this number there are some 250,000 Afridis, of whom 30,000 are prepared to take the field at any time.

The Pathan is treacherous by nature and devoid of conscience, and although he is brave, will never miss an opportunity of foully murdering his enemy. The wild, raw, and bleak mountains of his native country have not failed to influence his character. Although with his sinister character, he is hardly a desirable member of society, yet one cannot but admire his strong individuality. As a soldier, he possesses great dash, but his fiery, untamed temperament often causes him to lose his head in the heat of battle, and makes him inferior to troops less physically strong, but of cooler blood. Notwithstanding his blood-thirstiness, cruelty, vindictiveness, and treacherous nature, still there is no question as to his courage.

On the other hand, his determined and fiery eye, his upright bearing, and his measured gait, make him the picture of a man.

He also has his idea of honour and the three principal things in his code are: the right of sanctuary for every man, even for his enemy, the right of hospitality and the blood-feud. Although many doubt his loyalty, yet, as a rule, he has proved a loyal and devoted soldier. There are 67 companies of Pathans in the army.

Of the other numerous races from which recruits are obtained, none have the same striking characteristics as those I have mentioned, still the Mahrattas are worthy of mention. This people, who for centuries spread terror throughout India, have lost their martial spirit and the Mahratta of to-day is more devoted to an agricultural and commercial life than to that of a soldier. There are 60 companies composed of Mahrattas.

The question, as to whether the native army is to be relied upon, is a difficult one to answer. History depicts such varying examples of loyalty and treachery, and the causes are so manifold that it is impossible to arrive at a definite conclusion. It is, however, noteworthy that the Indian Government has the greatest confidence in its native army, for at the beginning of this year it decided to arm it with the same weapons as the European army, and has already begun to do so. All the troops despatched to China have the new Lee-Metford rifles.

This is a great step: for with it disappears the custom hitherto prevailing that the native army should always be armed with an inferior rifle to that in possession of the British army.

A RUSSIAN VOLUNTEER WITH THE BOERS.

TRANSLATED FROM THE RUSSIAN BY CAPTAIN C. WANLISS, 2ND
BATTALION, SOUTH LANCASHIRE REGIMENT.

The following is an account of the experiences of a Russian civil engineer, who served as a volunteer in the Russian commando with the Boers.

The Boers welcomed the volunteers with the greatest hospitality and on their arrival in Pretoria they were allowed fifteen days to provide themselves with all necessary equipment. Owing to their simple and practical organisation, all this was carried out in the most perfect manner. All the necessary arrangements in connection with the equipping of the volunteers were carried out in parliament house, which was divided up into a series of rooms, each designated by a number. The volunteer was directed to an appointed number, where he was at once provided with certain articles, and then directed to another room, and so on, until he had received all his equipment. The volunteers were provided with everything gratis, commencing with a shirt and finishing up with a horse, the latter being selected by each man personally. The Boers, who did not shed tears or make any fuss when their own people proceeded on service, appeared to be even more concerned about the volunteers and regarded them almost with pity.

The Russian commando set out, for Bloemfontein, under the command of Captain Ganetsky, but before it had time to arrive, that town was already occupied by the British and a prolonged period of inactivity ensued. De Wet's commando was in this neighbourhood at that time. The Russian commando, which consisted of 57 men, attracted special attention, as the volunteers composing it were an intelligent and orderly class of men, whereas the majority of the volunteers of other foreign commandos had joined more with the idea of personal gain than of fighting. Of actual Russians there were twenty, while the remainder consisted of Italians, Portuguese, and Germans. The Russian commando had its own band and a choir of singers. The Boers were greatly delighted with the Russian songs, especially with the Russian national anthem which they invariably encored. The extremes of heat and cold in the Transvaal were very great: during the day there were from 100 to 110 degrees of heat, whilst the nights were bitterly cold and necessitated our sleeping under three blankets; many of the foreigners got sick, but not a single Russian. During a whole month the commando only once exchanged shots with the British, when the Russian officer, Strolmann, who had been the last to join the commando, was killed. As a matter of fact, the Boers did not entertain a very high opinion of the foreign commandos, and for several reasons they did not prove as useful as they

might have. To begin with, the Boers rather despised European methods of fighting and considered their own superior, and they maintained that the Europeans had joined them in order to learn, and nothing would convince them to the contrary; then, again, there was no discipline among the foreign volunteers; each commando acted independently, and on one occasion when it was desired to unite them all under the command of Colonel Villebois de Marcuil, the several commanders refused. From constant intercourse with the Boers, one soon learnt their several characteristics. Notwithstanding the many actions in which they had been engaged, they could never retain their presence of mind at the sight of wounded in their midst: however few it might be, they at once lost heart and began to retire. Equally inexplicable are many other things that they did. For example, although they possessed any quantity of dynamite, yet, when they wished to blow up a bridge, they would only destroy one pier, and consequently the British were generally able to repair it in two or three days: this accounts, to a great extent, for the rapid advance of the British. During the siege of Ladysmith the Boers resolved to flood the town, but the dam, which was constructed under the supervision of a French engineer, burst, and the attempt ended in failure.

The war raised the price of everything to an enormous extent. The contractors, who supplied the Boers, were mostly Jews, who swarmed in Pretoria and who monopolised all the trade, and speculation assumed enormous proportions. For example, the government paid five pounds for a plain saddle, which would be absolutely unserviceable after a few days' use. The majority of the Jews were in favour of the British, and hated the Boers who would not grant them the franchise. The Boers had spies everywhere in their midst; the telegraph service was worked entirely by foreigners and Jews and through them the British invariably obtained earlier information than the Boers themselves. The censor, through whose hands all correspondence with Europe passed, was also a Jew. Altogether the British adopted every possible means to keep *au courant* with Boer affairs and also to prevent any outside help reaching them. This fact was most apparent at Delagoa Bay, which, although a Portuguese colony, was practically in the hands of the British; volunteers, who landed there, had the greatest difficulty in reaching the Transvaal and a number of them never got beyond Lourenzo Marquez.

RECRUITING IN THE FRENCH ARMY.

BY CAPTAIN H. H. DOWDING, 2ND ESSEX REGIMENT.

The following figures, with reference to the state of recruiting in the French Army, given in the "*Internationale Revue*" (Dresden) of last month (October), are not without interest.

It appears that, notwithstanding the strict regulations introduced by the late Minister for War, General Mercier, the number of recruits available shows no increase, but the reverse, and that the complete formation of the proposed additional battalions of infantry must be considered as far off as ever.

The annual contingent of recruits for 1899, *i.e.*, those who became liable for service in the previous November, reached a total of 324,538 men, *i.e.*, 6,640 men less than the previous year:—

	Men.
Of these, 29,313 men were rejected as entirely unfit for service, leaving available	...
	... 295,225
To these must be added—	
(a) Men of the 1897 contingent who had been put back for one year, of whom there were now found fit for service	... 13,379
(b) Men of the 1896 contingent, similarly put back, who represented themselves for the second, and last, time, of whom there were now found fit for service	... 5,460
	...
Making a total of	... 314,064

Of this total, however, after full consideration of all individual claims to exemption, etc., only 207,443 men were ultimately taken for service. After deducting 795 men, who entered the colonial army, the net total of recruits available for the year 1899 was—

Men joining the service for 1 year	...	68,281
" " for 2 and 3 years	...	138,367
Total for 1899	...	206,648

The corresponding figures for the previous year (1898) were—

Men joining the service for year	...	76,275
" " for 2 and 3 years	...	154,124
Total for 1898	...	230,399 men.

In other words, the figures for 1899 show a decrease of available recruits to the extent of 23,751 men.

2. As to the proposed addition of a fourth battalion to infantry regiments in the French Army—

Of 145 infantry regiments, 93 have received, up to date, a fourth battalion of full strength (4 companies).

11 regiments have a fourth battalion of 3 companies only.

22 " " " " " 2 " "

16 " " " " " 1 company only, and

3 " " no fourth battalion at all as yet.

With the gross number of recruits, reaching the military age, less by 6,640 men, and the actual total available for service less by 23,751 men than the figures of the previous year, the somewhat pertinent question arises—"where are the 115 companies required to complete the proposed fourth battalions to come from"?

Notices of Books.

The X, Y, Z of Musketry by Major C. Grant, Argyll and Sutherland Highlanders, Deputy Assistant Adjutant General for Musketry, Bombay Command.

Major C. Grant has just brought out a third edition of this useful work, which has been found of great use in helping instructors and pupils at the Indian Schools of Musketry to understand the Text Book "Small Arms and Ammunition, 1894." All questions relating to Ballistics will be found fully discussed and many points are explained which should be of interest to gunners, explorers and sportsmen generally.

Issue of orders in the field by Captain Ivor Philipps, 1-5th Gurkhas.

A second edition of this useful little book has just been published by Messrs. Thacker, Spink & Co. It has been revised and enlarged and should prove most useful to candidates preparing for tactical examinations.

UNITED SERVICE INSTITUTION OF INDIA, JANUARY 1901.

LIST OF BOOKS ADDED TO THE LIBRARY DURING THE LAST QUARTER.

Subject.	Author.	Date.
Annals of Sandhurst ...	Mockler-Ferryman, Major A. F.	1900.
Hill Warfare on the North-Western Frontier of India.	Egerton, Br.-Genl. C. C. ...	1899.
Ian Hamilton's March ...	Churchill, W. S. ...	1900.
The Issue of Orders in the Field.	Philipps, Captain Ivor ...	1900.
A History of British India, 2nd Volume.	Hunter, Sir W. W. ...	1900.
The Forward Policy and Its Results.	Bruce, R. I. ...	1900.
Operations of General Gurko's Advance Guard in 1877.	Epauchin, Colonel ...	1900.
Lieut.-Colonel John Haughton	Yate, Major A. C. ...	1900.
The Great Boer War ...	Doyle, A. C. ...	1900.
The Work of War Artists in South Africa.	Carter, A. C. R. ...	1900.
General Sir Arthur Cotton, R.E., K.C.S.I.	Hope, Sady ...	1900.
Lepcha Land ...	Donaldson, Florence ...	1900.
The New Battle of Dorking ...	.....	1900.
Seats and Saddles ...	Dwyer, Major F. ...	1886.
Australasia ...	*.....	1900.

Prize Essay Gold Medallists.

- 1872.....ROBERTS, Lieut.-Col. F. S., V.C., C.B., R.A.
 1873.....COLQUHOUN, Capt. J. A. S., R.A.
 1874.....COLQUHOUN, Capt. J. A. S., R.A.
 1879.....ST. JOHN, Maj. O. B. C., R.E.
 1880.....BARROW, Lieut. E. G., S.C.
 1882.....MASON, Lieut. A. H., R.E.
 1883.....COLLEN, Maj. E. H. H., S.C.
 1884.....BARROW, Capt. E. G., S.C.
 1887.....YATE, Lieut. A. C., S.C.
 1888.....MAUDE, Capt. F. N., R.E.
 YOUNG, Maj. G. F., S.C. (specially awarded a silver medal).
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 1890.....MAGUIRE, Capt. C. M., S.C.
 1891.....CARDEW, Lieut. F. G., S.C.
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 LUBBOCK, Capt. G., R.E. (specially awarded a silver medal).

MacGregor Memorial Silver Medallists.

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 1897.....SWAYNE, Capt. E. J. E., 16th B. I.
 SHAHZAD MIR, Dafadar, 11th B. L.
 1898.....WALKER, Capt. H. B., D. of Corn. L. I.
 ADAM KHAN, Havildar, Guides Infantry.
 1899.....DOUGLAS, Capt. J. A., 2nd B. L.
 MIHR DIN, Naik, Bengal S. and M.
 1900.....WINGATE, Capt. A. W. S., 14th B. L.
 GURDIT SINGH, Havildar, 45th B. I.

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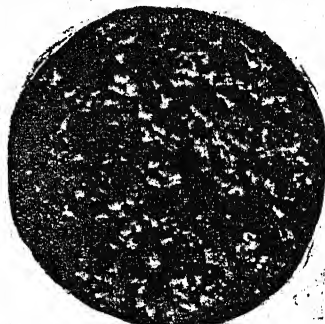
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Capt. H. W. R. Senior	Indian Staff Corps.
Capt. C. Rattray	Indian Staff Corps.

The following SIX, who read with us, also received NOMINATIONS:—

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Capt. J. Vaughan	7th Hussars.
V. R. Brooke, Esq.	9th Lancers.
A. Symons, Esq.	13th Hussars.
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And, in addition, the following QUALIFIED:—

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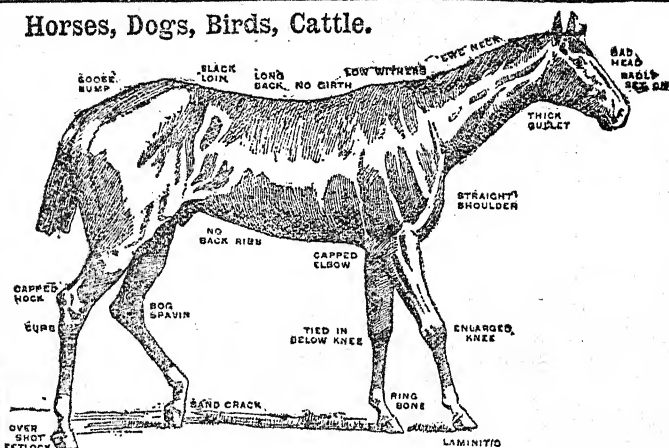
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Journal of the Royal United Service Institution, December 1900:—The routes of submarine cables. The great Trans-Siberian-Manchurian railway. The question of the Type of Battle-ships and cruisers most suited for the Russian fleet, translation. A Journey in Cyprus, 1899. On the framework for our forces which the war in South Africa appears to suggest, and on the way to give due weight to military and naval opinion without injuring our system of Government. *January 1901*:—The execution of King Charles I. A few naval ideas for the coming century. A retrospect of the war in South Africa, translation. To India: Military, Statistical, and Strategical sketch-plan of future campaign, translation. Light Infantry: A suggestion. *February*:—In Memoriam: Her Majesty Queen Victoria. Military training in Secondary Schools. Armour as at present applied; and its behaviour in action. The German Imperial manœuvres in Pomerania in 1900. National responsibility. To India: Military, Statistical, and Strategical, translation. South African campaign. The Orange Free State Artillery.

The United Service Magazine, January 1901:—Notes on the evolution of Cavalry. Naval economics. The Armoured Cruiser. Cyprus for German East Africa. Strategic devastation. The Bay of Gibraltar. The new magnanimity. The Chinese Crisis. Frederick the Great, V.—The second part of the Campaign of 1757. Cavalry training. *February*:—Victoria Regina Requiescat in Pace. Notes on the evolution of Cavalry. Naval Strategy and the Channel Islands. The record of a march of a thousand miles in South Africa. Frederick the Great, VI.—The campaign, 1758. Thoughts on the campaign of 1815. The practical use of our weapons. A plea for the bayonet. Army reform, past and present. Army reform, absent minded or thorough. The Universities and the Army. The homing or carrier pigeon in warfare. *March*:—Queen Victoria from the imperial point of view. Some causes of inefficiency in the Navy. Notes on the evolution of cavalry. A civilian-ridden nation. Hysterical warfare, 1815—1900. Frederick the Great, VII.—Minden, etc. Musketry and discipline. The future function of the militia. The Volunteer force. The unintelligence of Thomas. Practical hints on homing pigeons.

Proceedings of the Royal Artillery Institution, December 1900:—The Boer war, 1899-1900. Coast defence. The IInd Brigade Division, Royal Field Artillery, in the Natal Campaign, 1899-1900. The manœuvring of the wagons of a Field Battery. Field glasses for service. Forecast of promotion in the Royal Artillery. The training of Battery horses. *January 1901*:—Death of Her Majesty Queen Victoria. The strength and cost of Cromwell's Army in 1654. A moving target for Miniature Ranges. A motor field battery. The Boer war, 1899-1900. Electrical inkless printing. Experiences with a horse transport from India to China. The IInd Brigade Division, Royal Field Artillery, in the Natal Campaign, 1899-1900.

Journal of the Military Service Institution, January 1900:—Military impedimenta. Porto Rico. Napoleonic strategy. *March*:—I, Organization of a general staff. II, do. III, do.

Journal of the United States Artillery, November-December 1900:—Instruction of Coast Artillery. The second Boer war. A project for the regulation of Sea-Coast Artillery fire, applicable to the Russian Artillery. The Dragon (or Kite) Balloon. The development of the Krupp Field Artillery Matériel. *January-February 1901*:—Observations of firing expedients of Coast Artillery. Land defences of Manila Bay, May 1898. The second Boer war. The study of Sea-power. Graphical Comparison of the efficiency of naval guns. The development of the Krupp Field Artillery Matériel. A comparison of the Holden and Smith Chronographs.

Other Journals received by the Institution.—Blackwood's Magazine, January, February and March. Journal of the Royal Geographical Society, January, February and March. The Strand Magazine, January, February and March. The Review of Reviews, January, February and March. The Royal Engineers Journal, January, February and March. The Indian Medical Gazette, January, February and March. The Indian Volunteer record.

Revue de Cavalerie, January and February.

Revue du Cercle Militaire.

Jahrbucher fur die Deutsche Armee und Marine, February and March.

Militar Wochenblatt.

Memorial de Artilleria, January and February.

Schweizerische Zeitschrift fur Artillerie & Genie, January and February.

Internationale Revue uber die gesammten Armeen und Flotten, January, February and March. Other principal daily and weekly papers received.

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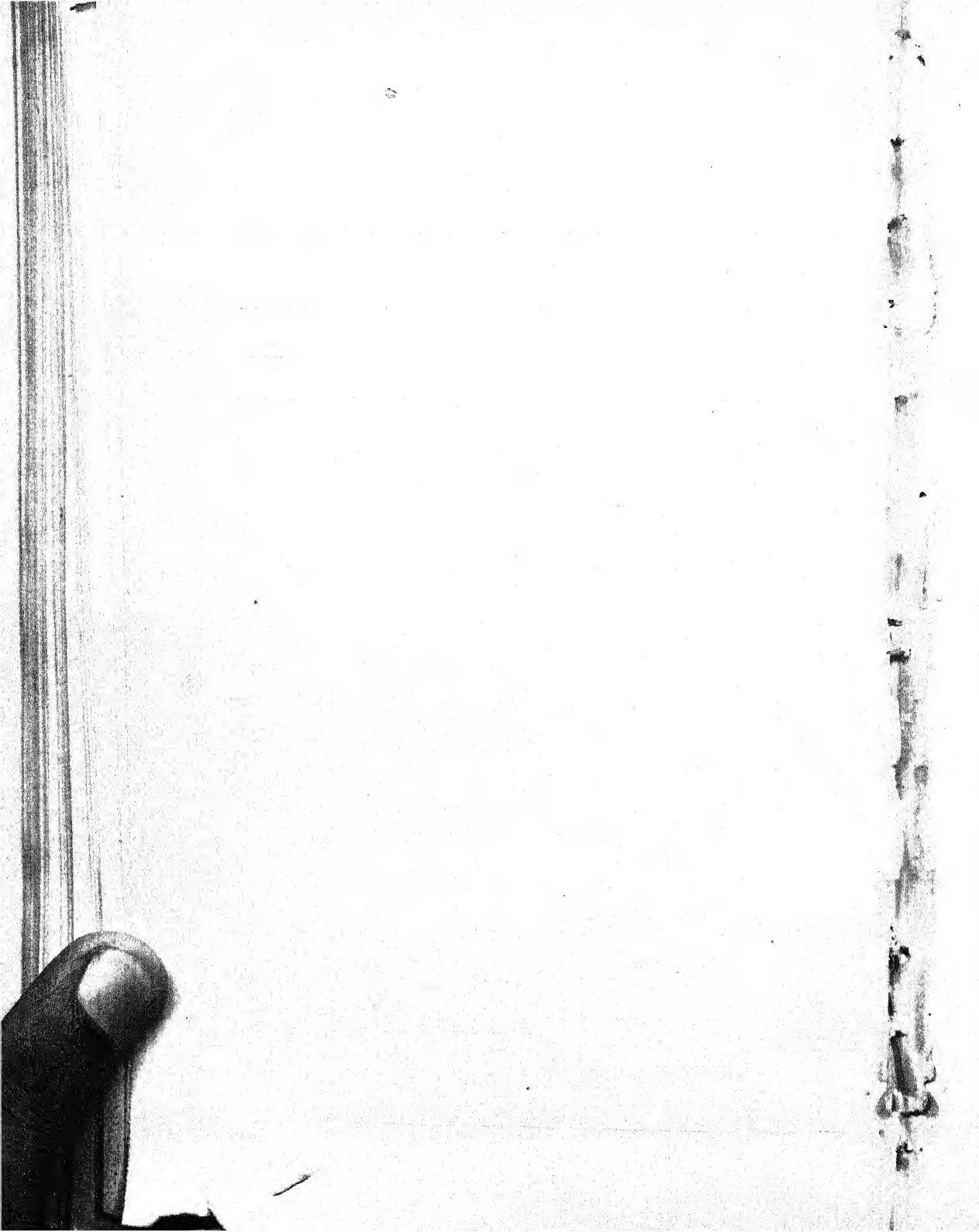
List of Books added to the Library during the last quarter.

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The Problems of Asia	Mahan, Captain A. T. ...	1900
Khurasan and Sistan	Yate, Lieutenant-Colonel C. E.	1900
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The Defence and Defensive Positions	Edwards, Captain F. M. ...	1900
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A Bibliography of English Military Books up to 1642	Cockle, Captain M. J. D ...	1900
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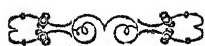
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The Journal

OF THE

United Service Institution of India.

VOL. XXX.

APRIL 1901.

NO. 143.

SOME NOTES ON THE WAR IN SOUTH AFRICA, WITH REFERENCE TO INDIAN VOLUNTEERS.

BY CAPTAIN E. DAWSON, R.V.R., LATE SERGEANT, LUMSDEN'S
HORSE.

Those who have read my articles published in this Journal in July 1899 and April 1900 are aware of my opinions upon the value of the Volunteer Force of India as existing at present. For those who have not read those articles it is enough to say that I hold that the Government of India is not getting full value, or anything near full value, for its annual expenditure of twenty lakhs or so upon the volunteers, and that the changes which I advocate involve a reorganisation so sweeping as to amount to reconstruction.

Some such changes, I am persuaded, are necessary if Government is to reap a reasonable benefit for the outlay of money.

If I am told, in reply to my suggestions, that they are impracticable and amount to a counsel of perfection, I say, abolish altogether the expensive sham called a Volunteer Force, and devote the money to some useful purpose—say, towards the increase and improvement of the Artillery in India, or Harbour Defences.

For it cannot be too strongly insisted upon that the Volunteer Force *does* cost a lot of money. Twenty lakhs, one hundred and thirty thousand pounds—is a good round sum.

In the meantime, however, it behoves each of us to think what he can do (and do it) towards getting some sort of usefulness into the present organisation so far as that feat is humanly possible. It happens that administrative changes in Burma have resulted in my being transferred in my civil capacity to a place where I can no longer be of any use as an active volunteer officer, and the thing that seems to lie nearest my hand is to make use of a portion of such leisure as I have in writing down, for publication in the Journal, a few notes upon such lessons of the South African campaign as it seems to me good that auxiliary soldiers should learn.

Having previously (in December 1899) offered myself as a volunteer officer for active employment in the war, and not having been fortunate enough to be accepted, in January 1900 I obtained leave of absence from my civil appointment, and went to Calcutta to join the regiment of Mounted Infantry which was then being raised for service in South Africa. Colonel D. M. Lumsden (Surma Valley Light Horse), who had obtained the sanction of Government to raise the regiment, and had made a generous donation (I think half a lakh) towards the fund required, was in command, and the corps received officially the title, by which it has since been known, of "Lumsden's Horse." The original idea seems to have been to raise a corps of planters, but applications to join poured in from men of different occupations in all parts of India, and this idea could not be completely carried out. The adjutant and the officers commanding the two companies of the battalion were lent by Government and seconded from regular regiments; the other officers, with the exception of one, who had served as a private in the Calcutta Volunteers, were, I believe, all planters, and so were a large number of the rank and file, probably more than half. A maxim gun was afterwards added, and the officer in command of this branch of the corps was a doctor. Soon after I joined, I was made a sergeant.

Speaking of the corps in general, it was a corps of gentlemen. It was a corps of white men, with an Eurasian here and there. In the matter of physique, I should say that there are very few regiments in the world which have a better average. Most of the men were good horsemen, and, what is nearly as important, "good horse-masters."

Most of us could shoot fairly straight. There were not a dozen out of the 250 who had ever handled a Lee-Metford before, but when we practised at sea, firing from a platform boomed out from the stem of the steamer at a small target with a 6-inch Bull boomed out from the bows, "possibles" were made over and over again. How far this good practice was due to training as volunteers (shooting with Martini-Henrys twenty years old), how far to natural aptitude, and how far to the excellence of the new weapons, I leave the reader to judge.

As for the drill of the regiment when it was formed, perhaps the less said about it the better. Theoretically, every man was supposed to belong to some Volunteer Corps. We had a whole section from the Bihar Light Horse, and another from the Mysore and Coorg Rifles. In addition to other possible advantages, these men possessed the real one of knowing one another from the outset. But, taking the regiment as a whole, the men knew next to nothing of Mounted Infantry drill, and the (volunteer) officers, with one or two exceptions, knew as little or less. There were non-commissioned officers who did not know how to post sentries, and men who did not know how to stand at ease. The Manual of Exercise was an unexplored mystery to most, and formation of fours a thing unknown. At this time of day, and in a service publication, I presume it is unnecessary to argue the assertion that the prompt and accurate performance of the minutiae of drill has a distinct value (apart from the usefulness of the drill itself) as an aid to and a part of discipline.

However, the men being what they were, and "the root of the matter" being in them, and with plenty of good will, the work during the month which elapsed before we were able to leave Calcutta, and the more concentrated and severe work on board ship, did wonders. I hope I may be pardoned if I say that some credit for this is due to the non-commissioned officers, and, further, for holding the opinion that six months' solid training would have made the regiment one of which any army in the world might be proud.

Of the services rendered by the corps in the campaign, it would ill become me to write, if only for the reason that, to my very bitter disappointment, I fell out of the ranks at an early stage of the general advance of the army from Bloemfontein, after being present at only three engagements. Dysentery, the scourge of every army, struck me down, and though I got better of my first attack, and travelled some two hundred miles, mostly on foot and wholly illegally and irregularly, to rejoin, and succeeded in reaching Johannesburg on the day of Lord Roberts' entry, it was only to succumb again and to lapse to the condition of a useless drag upon the army.

But I may say this much; that Lumsden's Horse was more useful than (I think) any expert, judging from the facts, would have foretold. When the British Army shall possess regular organised *regiments* of Mounted Infantry, they will be good. At the end of a month's campaigning they will probably be as much better than Lumsden's Horse as we were better in some respects than some of the scratch battalions of regulars who were acting as Mounted Infantry in the campaign. The Colonial Corps, again, were worth more per man than we were. [And, by the way, they cost more, too. The South African regiments had special rates of pay of their own, and in the other Colonial Corps the Imperial Government pay (cavalry rates, 1s. 2d. per day) was supplemented by the Colonial Government concerned to the tune of five shillings or more per diem, while we drew cavalry pay only.]

It may safely be said that in Lumsden's Horse the Imperial Government got value for the money.

To take the average, with the one doubtful exception of shooting, I have no hesitation in saying that neither officers nor men were at any point measurably better or more useful than they would have been if they had not belonged to the Indian Volunteer Force.

Coming now to the "Lessons of the Campaign."

First and foremost, this war has conclusively demonstrated the

Shooting. enormous value of good shooting, which term should include "judging distance" and all kinds of eye-training. It is a good thing to have men who are ordinary accurate range shots, men who can be depended upon to hit a man's head at any range up to 1,000 yards when they are told the distance. Twenty or thirty such men would, under certain quite conceivable circumstances, help more towards the taking of a position than a whole battalion of "third class shots." Above all, they would be useful against an enemy possessing (like the Boers) no discipline in our sense of the word. But, if they could accurately judge the distance for themselves, their value would be more than doubled, and in

many cases their presence would be decisive. To my mind, the question is still arguable whether it would not pay to have special units composed of such picked men, and to use them somewhat as "Riflemen" were used in the days when the bulk of the army carried smooth-bores.

It is a good thing, I say, to have such men, but they must always be proportionally few in number, and the circumstances under which their supreme value would be most apparent are special circumstances. For ordinary every day fighting, in South Africa or anywhere else, what we want are groups of men who can be depended upon to drop down anywhere at any moment and thoroughly search with their fire any given area. It will be the business of the section or company commander (I am writing of unmounted infantry now) to locate the area to be fired at and to control the fire; the men must be able to shoot, so that when they cease, though they cannot "see anything drop" or see the bullets striking, they will be confident that that particular area is riddled. This, in my view, is the ideal towards which our efforts in the department of musketry should be directed. We must eliminate the third class shot; the British Empire Army is not big enough to hold him.

Some writers upon war at the present day favour what I may call the chess-board view almost to the exclusion of all others. The great game of strategy, the sport of Moltkes, must draw its imagery from the game of Steinitz and Zukertort, though the fallacies of a parallel are self-evident. An umpire, whether at Kriegspiel or at Peace Manœuvres, must be bound by certain rules, and the inevitable tendency is towards the too rigid application of such rules to war itself. But, "It must be emphatically asserted that there does not exist, never has existed, and never, except by pedants * * * has there ever been supposed to exist 'an art of war' which was something other than the resultant of accumulated military experience."*

Another great soldier has laid down the maxim—"In war there must be a continual recurrence to first principles," and however interesting it may be to arrange campaigns and actions on paper, and to suppose armies surrendering to, and bloodless victories being won by, sheer superiority of strategy, we shall do well never to overlook the "personal equation." This factor is as little negligible in strategical problems as in tactical. At present there seems to be no likelihood that a British General will ever be able to arrange for the surrender of a hostile force by pointing out to the hostile general an overwhelming superiority of numbers, and the armies we shall have to fight will be so large that it is almost impossible to imagine a decisive superiority upon our side even of position. The moral of this is that while the other nations may devise plans for crushing their enemies with vast hordes of magazine-emptyers, we must devote our attention to the evolution of the shooter who hits. We must be, by comparison, "few"; let us see to it that we are "fit." For the army that we ought to have, and that as a matter of Imperial Insurance we *must* have, the third class shot is not worth his pay and keep.

The reason why I have dwelt at some length upon this part of the subject is because it seems to me that shooting is one part of a

soldier's work in which the volunteers can be improved under the present system. Gentlemen, my brother-officers, here at least is one thing you can do—teach the volunteer to shoot and hit. Work at this, spend time and labour and patience on the range even if it leaves you less of those commodities for use on the drill-ground and the picnic-camp. I know of no law of nature whereby Englishmen or the descendants of Englishmen suffer any disability in regard to shooting. Rather the contrary. The English long bowman seems to have been the most formidable soldier of his day. The British Infantry of the Napoleonic wars were renowned for good shooting. In his *Memoirs* Marbot remarks more than once upon the British soldier's good marksmanship, and laments that in the French service there was no sufficient or systematic target practice such as we had. Yet, in the account of some almost forgotten siege in India, published (I think) in this *Journal* about two years ago, general orders were quoted in which officers were reprimanded for allowing their men to fire during an attack, so completely had the soldier come to be regarded as a pikeman. And Maurice says—"When a few rifle regiments at first, and afterwards the army generally, *had liberty* (the italics are mine) to practise shooting, that was looked upon as an accidental and exceptional thing unconnected with the real business of the soldier, and therefore with his every-day life. *This unfortunate divorce between the work at the butts and on the manœuvre ground, once established in the habits of an army, cannot for many years be cured. It exists still.* Yet every manœuvre in which careless aiming, careless expenditure of ammunition, and wrongly adjusted sights are permitted, is a direct injury to the fighting efficiency of the force which manœuvres. * * * * *Good shooting, and movements tending to give to good shooting and good weapons the greatest possible advantage, are, next to a healthy morale, the essence of modern fight.*"*

These words were written ten years ago, and doubtless they have been often quoted, but I think the lesson they convey is as much needed as ever. All allowances being made for the peculiar circumstances under which our troops fight in South Africa, the fact remains that they have had to win battles by superiority of numbers. I challenge any officer who has served with the Field Force in Africa to deny that if the mass of our men had been good shots, we could have beaten the Boers with a much smaller army than we had. And what can be the reason, but that fatal "divorce between the work at the butts and on the manœuvre ground?" In this war, as in all wars, the man who shoots "must in the first place *hit*, in the second place *hit*, and in the third place *hit*." Prince Kraft said it of artillery, but it is equally true—if anything, more true, of infantry.

Read now what a foreign critic wrote only last year†—

"Up to the present the English have not adapted their tactics to the annihilating fire of the Boers. *But to do this* (the italics are mine) *troops must be accustomed in peace to long range fire.* It is

* "War." Colonel Frederick Maurice, R.A., 1891.—*MacMillan*.

† Von Löbell's Annual Report, 1899. Précis by Lieutenant-Colonel E. Gunter, P.S.C. Published in the *Journal of the Royal United Service Institution*, 15th November 1900.

difficult to hit small objects such as men's heads in broken ground over 800 yards off, but *that the eye can be trained to this is shown by seamen and sportsmen. Troops untrained to shoot at small objects at great distances will hit nothing in war.*"

Now, a man who can shoot with an old Martini-Henry (I have seen some which had to be sighted for 100 yards more than the known range) is much better than one who cannot shoot at all. The more trouble taken with the volunteers on the range now, the better they will do when the new rifle does come.

Bound up with this matter of shooting is of course that of armament. We carried the Lee-*Metford* rifle, the visible differences between which and the Lee-*Enfield* carried by the other British and Colonial troops are that it has no safety-catch, which means that it cannot be safely handled and knocked about while a cartridge is in the chamber, and that it has a steel heel-plate instead of a brass one. It is a splendid weapon. Like all bolt-action arms, it is apt to jam if not kept clear of sand and dirt, but the soldier on a campaign may be trusted to keep his rifle in working order. The average Indian volunteer in peace may not, and for this reason I do not think we ought to expect this weapon to be issued to volunteers in India. On the other hand, there can be no doubt that the Martini-Henrys now in use ought to be replaced by more accurate arms. A rifle with the Martini action and *Metford* or *Enfield* (I do not know the difference) barrel would seem to meet the case. It would at any rate obviate the necessity of carrying two kinds of ammunition when volunteers and European regulars act together, and it would provide the volunteers with a rifle that only requires holding straight to hit.

It is probable that in the infantry officers will in future wear their swords only on ceremonial parades. On other occasions they will carry rifles. Our officers had no swords, but they ingeniously evaded the spirit of the Regulations by carrying rifles, indeed, but of the "sporting" pattern, about six inches shorter than the regulation arms, and wearing them on the saddle, muzzle downward, in long cavalry buckets that, if anything, were more conspicuous than a leather-scabbarded sword.

We had brown leather (Cawnpore) waist belts with braces crossed behind. On the waist belt were two stiff pouches holding fifteen rounds each, and a bandolier holding twenty more. On the left hand brace a sliding bandolier for fifteen, and on the right hand brace one for ten. Each man was supposed to have always in his possession, on his person and horse, 150 rounds. The brace bandoliers were very convenient, but they had no flaps to prevent the cartridges from jolting out, and as we trotted about Africa we might almost have been tracked by our trail of dropped ammunition. The Regulars' Mounted Infantry, and most of the others, had broad webbing bandoliers, holding 100 rounds, worn over the left shoulder. During my unauthorised march up country I borrowed one of these and wore it for a few days instead of my own braces for an experiment. It held the cartridges well, but it was rather heavy and uncomfortable. I think the brace bandoliers, with the addition of buttoned flaps, would be better, but they should

be made so that the soldier could always have 100 rounds on him. One soon gets used to sleeping in the brace equipment "sleeping in your (verbal adjective) straps," as Tommy puts it—but with the big, loose, webbing bandolier there is a strong temptation to slip it off when one lies down. The brace equipment might be made in webbing for India.

We were served out with putties as well as with brown puttie-gaiters, but the former were soon discarded. The puttie-gaiter is undoubtedly the best leg-gear yet invented, whether for marching on foot or riding. I had a pair made to measure in Calcutta, which naturally fitted better than the Cawnpore article, but the latter is good enough for all practical purposes. I wore mine without ever taking them off for weeks at a time without discomfort, whereas putties, if tight enough to keep up, are uncomfortable to sleep in. I tried the experiment of carrying ten cartridges stuck in the top of each gaiter, and found that they stayed there all day, and that the weight was imperceptible in walking or riding. If anyone has tried this plan when shooting in India, he will know that it is a convenient place for ammunition, though it seems fanciful. I would recommend a ten-round bandolier to be sewn on the top of each puttie-gaiter. Of course I write of small-bore cartridges.

I saw a sergeant-major of a South African Corps carrying his sheathed bayonet in leather "cleats" made for the purpose on his left legging, and it struck me as being rather a good idea for Mounted Infantry. The bayonet worn in a waist-frog is often in the way when a haversack and water-bottle are also worn, it adds to the weight on the trunk, and it often makes a noise by knocking against things. If one edge of the bayonet were sharpened, the soldier would have a useful knife for cutting meat, ropes, grass, etc. At present the bayonet is chiefly useful as a candle-stick and tin-opener.

We had leather rifle-buckets, about six inches deep, hung on the off side of the saddle by a stiff piece of leather, the full width of the bucket. This prevented swinging, and the arrangement answered admirably. On the march the right arm was passed through the sling of the rifle as it stood in the bucket. For my own part, after having been in command of a section, when I wanted both arms free to signal with, and for that reason slung my rifle across my back, I usually kept to that mode of carrying it, and my bucket was stuffed with packets of ammunition, or held a tin of "bully beef."

We had khaki serge coats, officers' pattern, with breast as well as side pockets. On account of our coats and gaiters we were often saluted, being mistaken for rather dirty officers, in Bloemfontein and Johannesburg. Our buttons and badges were black when served out, and were supposed to be inconspicuous, but the black stuff soon wore off, and the rubbing of belts, etc., made the metal glitter like ordinary brass.

The khaki cord breeches wore very well. The ammunition boot is rather too heavy, and the nails are not required for Mounted Infantry. Brass would be better than iron for heel-pieces. During my

marching on foot the heel of one of my boots came off, and caused straining of the heel tendon. A Yeomanry sergeant gave me a pair of the English "Yeomanry boots," which I found exceedingly comfortable.

The first head-dress we got in Calcutta was the topi known as the Cawnpore Tent Club, or pigsticking, hat, such as half the Europeans in the mofussil wear every day. This was abandoned as too conspicuous, and we got little saucer-shaped topis of thin pith, suggestive of the female globe-trotter of evangelistic bias.

These were soon discarded in Africa, and those which were not sodden or knocked into pulp are perhaps even now being worn by the Kaffir loafers of Northern Cape Colony. I don't think there was one of these left in the regiment when the march from Bloemfontein began. We wore then and thenceforward the *puttoo* hats which were given to the corps by one of the Calcutta outfitting firms, and very good hats they were, but I should not care to campaign in India with them.

Our saddlery was from Cawnpore. The saddle was very heavy when "dressed" with cloak, wallets, forage-bag, etc., etc.; it was no light load to lift from the ground, but it was both strong and comfortable. I took care to get "English leather" reins and stirrup-leathers.

I know next to nothing about the subject of Field Fortification. I shall try to learn as much as I can, and it behoves us all to do so, for there seems to be no doubt that it is to play an important part in modern war. Near Kroonstad I saw some of the Boer works. They had apparently intended to hold an important position, but abandoned it, probably because they thought their rear was threatened. The gun-pits were not very deep, but they had holes in which the gunners could crouch with head-cover. Their ordinary trench, which they would as a matter of course make at any place intended to be held, was much *deeper* than any field work I have seen before, either actual or on paper. They never make sangars. Once when I was in charge of an outlying picket in the day time, a regular officer came along and told us to build a sangar. There was plenty of material, and we set to work piling up boulders. We thought we were doing it rather well. Presently came riding by an officer of pretty high rank—I shall not mention his name—some readers may know who he was when I say that he was beloved, that he wore a soft hat and no "side," and that he was a wiry, ubiquitous person. He sat on his horse and watched us toiling away at the rocks, then asked—

"Who told you fellows to do this?"

"Captain ———, Sir," answered someone.

"Well, knock it down again. Its nothing but a shell-trap. You fellows don't want to crowd together behind a wall to give you confidence. Boer gunners could see that sangar for miles, and drop shells into it"

He dismounted, and went on—

"I have been fighting Boers for months now, and never saw one of them. This is what *they* do."

He piled two or three boulders together so as to leave a tiny loop-hole, and lay flat down behind it.

"There you are, two or three stones and a hole to shoot through. Nothing conspicuous."

"Give my compliments to Captain ———," he added, as he swung into his saddle, "and tell him we ain't fightin' Zulus." And he rode away. I did not deliver the message to the officer concerned!

I do not imagine that the average Indian volunteer can easily be persuaded to dig trenches, or even to pile boulders. He would suggest making an estimate, and sending for a maistry. But I advise any volunteer officers who desire to qualify themselves for service to give some attention to reports and drawings which will soon be published of the Field Fortifications used in this war.

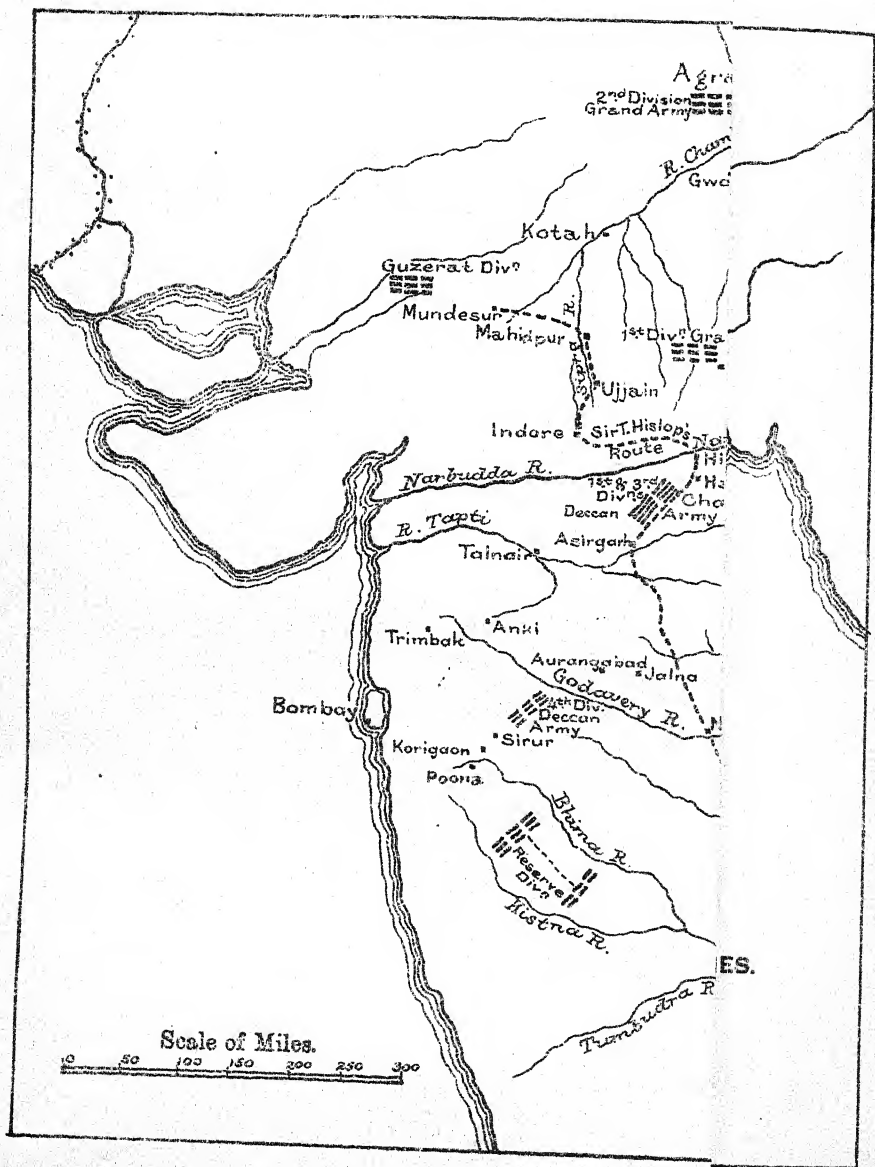
I do not suppose that it is necessary for me to remark that it is desirable for all volunteer officers to avail themselves of any chance they may have of doing duty with regular regiments, as by the Regulations they are permitted to do. In the present state of things, the volunteers being generally regarded as a bad joke, it must require a good deal of moral courage for any volunteer officer to show so decidedly that he takes his commission seriously. I know personally only two (in India) who have done it. One was a non-commissioned officer of Lumsden's Horse, and had put in his month with a British regiment in India. The other was once a sergeant in my battalion, and it is my boast that I induced him to accept a commission as major. He worked very hard with the Guards at Chelsea, and is now a lieutenant-colonel.

I would urge upon those officers who possess any influence in the Councils of Government to do their utmost to get the allowance of ammunition increased and to suggest that a larger proportion of the expenditure upon volunteers be devoted to musketry. More prizes should be offered, and the more obvious pot-hunter be handicapped to the advantage of the third class shot, who must be improved until he no longer deserves that designation.

It is in this direction alone that I am able to suggest any amelioration under the present system. To those who agree with me that that system has been weighed and found wanting, to those who, having the honour and safety of the Empire at heart, desire to see the money allotted for its defence expended to the best possible advantage, and who believe that the Volunteer Force is a bad bargain, I can only say, wait. The matter must surely come up for consideration before long, and there are circumstances which seem to me very favourable. We have a Viceroy whose vigilance nothing escapes, and before whose

energy difficulties melt away. And with Lord Roberts at the War Office India is not likely to be forgotten. With thousands of the soldiers of Federated Australia in the field, and the words and deeds of Canada fresh in the public mind, the full meaning of the terms "Imperial Defence," "Imperial Federation," is illustrated as it has never been before. And though that wise crowned head, that great and noble heart, of the Lady we have been so proud to serve, are being laid to rest for ever as I write these words,* I believe that the Sovereign who in this dawn of the new century enters into his august inheritance will, with that large conception of a monarch's duty which was always hers, give countenance to all the hopes and efforts that have for their aim the keeping of his Empire safe and free.

* February 2nd, 1901.



THE LAST MARATHA WAR.

BY CAPTAIN R. G. BURTON, 1ST INFANTRY, HYDERABAD CONTINGENT.

It is strange how little is known to many of us regarding the events which led to the gradual acquirement of the value of history. by the East India Company of the greater part of India, both the political and military features of which present characteristics of the most absorbing interest, and yet those events are both dramatic and instructive, comprising as they do campaigns invested with an interest scarcely equalled and never surpassed in the history of nations—an interest which ever increases as the student passes from one to another and reads of those great deeds which won the Empire.

There is perhaps no parallel in history of these wars, undertaken frequently by small armies against numerically overwhelming superiority, and in the face of obstacles of climate and locality which are amazing to contemplate. The annals of these campaigns are adorned with glorious deeds and illuminated by romantic episodes. In them many of the most famous British regiments and many of the greatest soldiers and administrators played an important part; they were characterised by great marches, by the surmounting of great obstacles and great vicissitudes, by desperate enterprises, by pitched and bloody battles, and sieges and assaults of fortresses which appeared well-nigh impregnable, but were overcome by the skill and fortitude of British leaders and the incomparable valour of British soldiers.

Nevertheless many of these campaigns, with all the lessons they have for us, have been consigned to comparative oblivion. In this country we frequently stand all unwittingly upon historic ground; or pass near the site of some great battle-field which, with more knowledge of events, we would in all probability turn aside to visit. But if we study the page of history, a new interest is at once awakened in the country, which cannot fail to be profitable in its results.

"History is philosophy teaching by example," and from history alone can examples be drawn for guidance in great affairs, whilst some remarkable parallels may be indicated between past events and those of our own time.

Perhaps it is because no satisfactory account of many of these events has yet been written that they are but little known. Some day, let us hope, a historian will be found to do justice to the annals of the British conquest of India—a subject worthy of the labour of an Alison and the pen of a Macaulay. Until then we must rest content with the somewhat dry accounts of contemporary writers, and the ephemeral productions of modern essayists.

In a previous paper *Wellesley's campaign against the Marathas was fully described, whilst a narrative of Lake's war in the north against the same military confederacy in the same year has also

* Wellesley's Campaign in the Deccan. By Captain R. G. Burton, *Journal of the United Service Institution of India*, October 1900.

been given us. * The present paper will deal with the events which led to the final dissipation of Maratha power.

The wars of 1803 and 1804 resulted in a peace which could in all probability have never remained permanent. The arrangements then concluded could at best lead to a temporary cessation of hostilities. There still remained all the elements of disorder, and the situation was fraught with danger for the future peace of the Peninsula. The fear of French aggression had indeed been removed by the Marquis Wellesley during his term of office as Governor-General; and had the policy of that wise statesman been continued, it is probable that much future trouble would have been averted. But that was not to be. The Directors of the East India Company took alarm at the magnitude of the operations and designs of the Marquis Wellesley, and the fatuous policy which followed on the vigorous measures of that statesman was in itself sufficient to eliminate a great part of the results which had been obtained at the cost of so much bloodshed. A policy of non-interference and inactivity soon reduced the British from the position of dominant power, a condition so necessary to the security of peace, to that of a co-equal with the neighbouring native states—a situation resulting in many years of anarchy and intrigue which terminated only with the Maratha war of 1817-18-19.

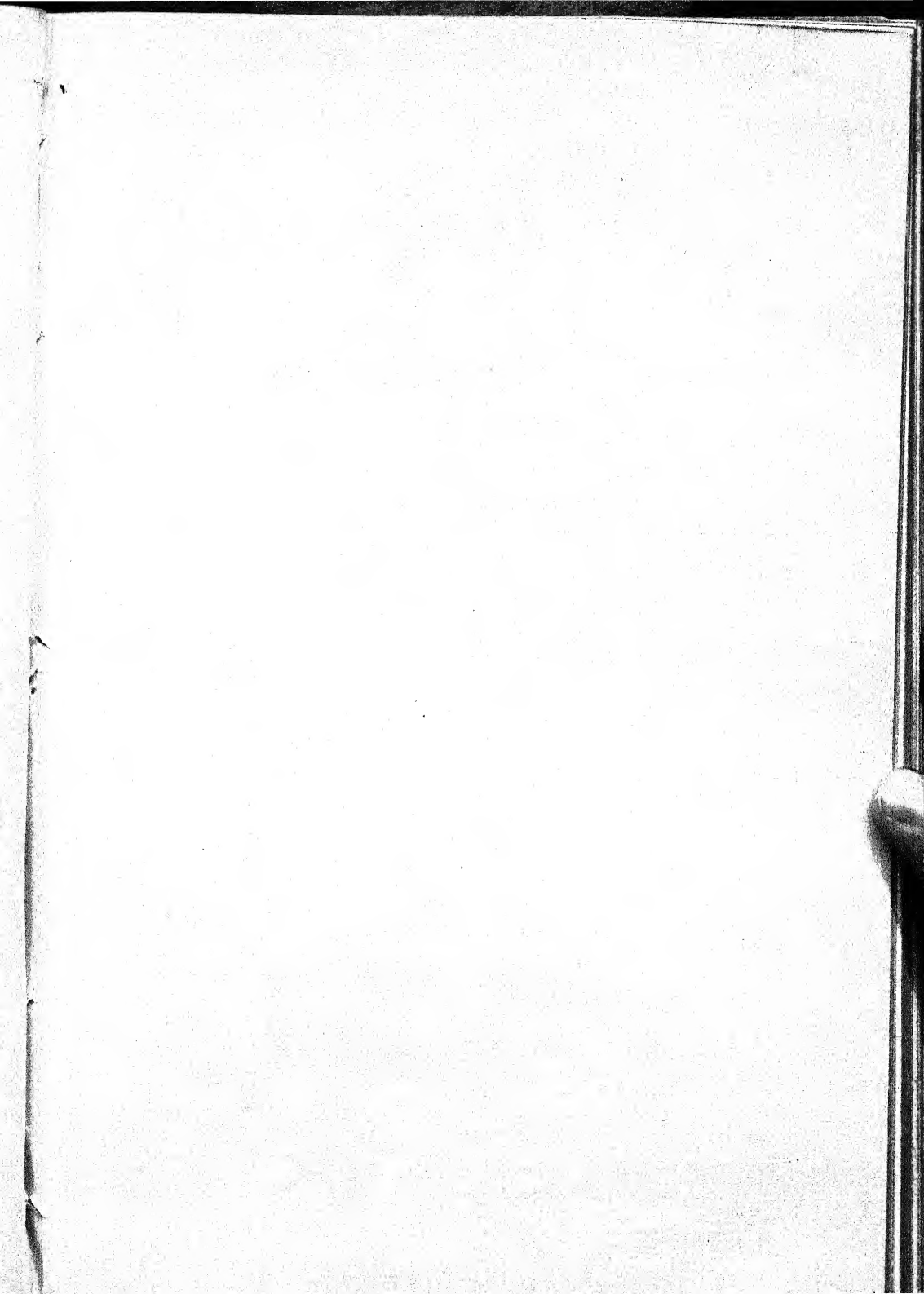
In 1817 Baji Rao was still on the throne of Poona, where he had been established in 1803 under the terms of the treaty of Bassein. He was the nominal head of the Maratha princes. On him devolved the leadership on those occasions when policy demanded combined action on the part of the Maratha Confederacy. He appears to have been possessed of all the basest attributes of the nation to which he belonged, and his reign had been characterised by intrigue, cruelty, and perfidy. Already in 1814 the murder at Poona of the Gaikwar's envoy by Trimbakji, the favourite of the Peshwa, had led him to the verge of hostilities with the British, and Baji Rao had then been forced to make an assignment of territory in support of a body of horse which he was obliged to maintain under the provisions of the treaty of Bassein.

Mulhar Rao Holkar was a boy of 11 years of age, and the regency of his territory was in the hands of Tulsi Bai, a woman of strong though infamous character, formerly the favourite mistress of the deceased Jeswant Rao Holkar.

Appa Sahib was head of the Nagpur State, having succeeded Parsaji Bhonsla, whom he caused to be assassinated. Amir Khan, in alliance with Mahdaji Sindhia, had risen to power and founded a strong military state in Malwa.

The Pindhari free-booters formed the primary cause of disturbance. They were not a race, but a military system of bandits. They fluctuated in numbers, being augmented at times by military adventurers

*When and why we first took Delhi. By Major-General Beresford Lovett, Journal of the United Service Institution of India, January 1900.





Maratha Camel Gun in Action.

From an old print.



PINDHARI HORSEMAN.

from various native states, and frequently amounted to as many as 30,000 men. They were of all races and religions, and appear to have been a bad imitation of the Marathas, who frequently employed them, and by whom they were subsidised. Their head-quarters were about the Narbada river, whence they raided far and wide, issuing forth in bands of from 2,000 to 3,000 mounted men, ravaging the country in every direction, and destroying life and property. They were mounted on small but hardy horses, armed with a spear, a shield, and a sword, whilst a few bore fire-arms in the shape of an old pistol or firelock. In 1814-15-16 they raided the Madras Presidency, committing widespread depredations, and eventually spreading consternation as far as the walls of Madras itself. They were, however, cowardly and unwarlike, and would in all probability have been easily suppressed had measures been taken in time. But the Government previous to 1817 appeared to be incapable of action. So great was the alarm and fear of these hordes of robbers that it is related that in 1816 "an idle rumour reached Madras of the arrival of Pindharis at the Mount; all was uproar, flight, and despair, to the walls of Madras. This alarm originated in a few *dhobis* and grass-cutters of the artillery having mounted their *tattoos* and, in mock imitation of the Pindharis, galloping about and playing with long bamboos in their hands in the vicinity of the Mount. The effect was such, however, that many of the civil servants and inhabitants on the Mount road packed up and moved to the Fort for protection. Troopers, messengers, etc., were seen galloping to the Government House, and thence to the different public authorities. Such was the alarm in the Government House that on the afternoon of that day an old officer, anxious to offer some advice to the Governor, rode smartly up to the Government Gardens, and on reaching the entrance observed the younger son of the Governor running with all possible speed into the house, who having got to a place of security ventured to look back, and then discovered in the old officer a face which he had before seen; when turning back again he exclaimed—"Upon my word, Sir, I was so frightened I took you for a Pindhari!"

The same writer relates that he "visited Calcutta early in 1817, when a temporary lull from the horrors and devastations committed by the Pindharis afforded a moment for reflection on the growing power of these marauders, and forcibly reminded the Supreme Government of the necessity of measures of a different temper from those heretofore adopted towards their suppression and extirpation. There was scarcely a day when some fresh rumour of barbarity or plunder by that banditti, on the Company's provinces, did not pervade and shock the public ear in Calcutta; and during this season of general alarm and disgust, the Local Governments of India seemed to consider the evil passed away like the monsoon, without any effort or plan suited to arrest its fast rising mischief. A few small detachments on the Narbada, and the western frontier of Bengal, were the only check upon the advance of these hordes; but latterly a summary mode of treatment to such Pindharis as were taken prisoners pointed out to the whole body the serious game that was in future to be dealt to them, as all quarter ceased to be given, and they were executed on the spot."

Attempts were made to enlist the aid of the Maratha States in the destruction of these freebooters; but while they ostensibly concurred with the British in the desirability of this measure, they took no action, but with that duplicity which forms their national characteristic, secretly and in some places their commanders openly encouraged

Measures of the Governor-General.

the Pindharis and shared their plunder. The Governor-General, Lord Hastings, therefore undertook extensive operations to crush this growing danger, and so successful were these operations that within two years of their termination the Pindharis had ceased to exist. The operations now undertaken were so extensive, and the forces employed so large, that it was evident that they could not be intended merely for a campaign against these freebooters, but as measures of defence in case of hostility with the Maratha powers. The nature and character of Native Governments rendered hostile action on their part probable if not certain. No treaty with any such Government, with whom diplomacy was merely another term for duplicity, was of more value than the paper upon which it was written. The experiences of 1803 had already proved this, when the Government of Hyderabad had secretly connived with our enemies, although the Nizam professed to be our faithful ally.

In fact, all history tends to prove that no trust could be put in Oriental Governments, to whom both truth and honour were unknown quantities.

A review of the native powers as they existed at this period and of the forces at their disposal may be not uninteresting. The strength of these forces may

be summarised as follows:—

Sindhia	...	15,000 horse,	16,000 foot,	140 guns.
Holkar	...	20,000	" 8,000	" 107 "
Peshwa	...	28,000	" 14,000	" 37 "
Bhonsla	...	16,000	" 18,000	" 85 "
Amir Khan	...	12,000	" 10,000	" 200 "
Pindharis	...	15,000	" 1,500	" 20 "

These were the powers who might be expected to oppose the British arms. The Marathas had already been dealt with in 1803 and 1804, and since then the famous Pathan Amir Khan had risen to power in the Rajput States, and was allied with Sindhia.

The Nizam's Government had also made secret overtures to the Peshwa, and was ready to side with the Marathas in case the latter should meet with success. The Hyderabad troops consisted of 25,000 horse and 20,000 foot.

It will be seen that the troops at the disposal of the hostile powers consisted in great part of horsemen. A false glamour appears to surround the name of the Marathas, to whom history has lent an undeserved prestige. The Marathas have never been remarkable for courage. The genius of the nation has tended more in the direction of diplomacy and intrigue. They had indeed acquired a certain military renown throughout India, but they were originally mere predatory horsemen, and it is not easy to understand how they had risen to

Character of Maratha troops.

such power in the land. Their success must be ascribed in part to the acuteness and subtlety of their intellects, and in part to the feeble condition of those with whom they had to contend.

Their decadence appears to date from the time of the inclusion in their armies of those regular corps of infantry and artillery which were raised by de Boigne, Perron, and other European adventurers in imitation of the regiments officered by Frenchmen in the service of the Nizam of Hyderabad. There were not wanting among the Marathas themselves far-seeing men who deprecated this innovation, whilst many subsequently attributed the overthrow of their power solely to the introduction of regular infantry and artillery. The Marathas excelled as predatory light horsemen whose mobility enabled them to assail an enemy's weak points, to flee from danger, and to reap success when it involved but little risk. Their regular infantry and artillery obliged them to fight pitched battles, for which they were unfitted, and prevented them from seeking safety in immediate flight when they deemed such a course advisable. They were thus encumbered in their movements, and might be forced to give battle against their will.

Since the days of Assaye and Argaum they had rapidly degenerated, whilst their breed of horses, once so famous, had apparently deteriorated. Moreover but few European officers* were now to be found in their employment. Their best troops consisted of Arabs, Rajputs,

and Mahomedans, and it will be seen that these alone generally offered any serious resistance. The Arabs appear to have been especially good and brave soldiers. They were at that time employed by all the native states, and to this day some of them are in the service of the Nizam of Hyderabad. An officer who had frequently fought against them wrote as follows in 1820 :—

“There are perhaps no troops in the world that will make a stouter or more determined stand to their posts than the Arabs. They are entirely unacquainted with military evolution and undisciplined; but every Arab has a pride, and heart of his own, that never forsakes him as long as he has legs to stand on. They are naturally brave, and possess the greatest coolness and quickness of sight; hardy and fierce through habit, and bred to the use of the matchlock from their boyhood, they attain a precision and skill in the use of it that would almost exceed belief, bringing down or wounding the smallest object at a considerable distance, and not unfrequently birds with a single bullet. They are generally armed with a matchlock, a couple of swords, with three or four small daggers stuck in front of their belt, and a shield. On common occasions of attack and defence they fire but one bullet; but when hard pressed at the breach they drop in two, three, and four at a time, from their mouths, always carrying

* *Note.*—The famous Jean Baptiste was in command of some of Sindhia's forces during this period. Concerning his name, Sleeman in his *Rambles and Recollections* tells the following story: “I was then with my regiment which was commanded by Colonel G——, a very singular character. When our Surgeon received the newspaper announcing the capture of Garha Koti in Central India by Jean Baptiste, an officer of the corps was with him, who called on the Colonel on his way home, and mentioned this as a bit of news. As soon as this officer had left him, the Colonel wrote off a note to the Doctor ”—

“My dear Doctor,—I understand that that fellow *John the Baptist* has got into Sindhia's service, and now commands an army——do send me the newspaper.”

in them eight to ten bullets which are of a small size. We may calculate upon the whole number of Arabs in the service of the Peshwa and the Berar Rajah at the utmost at 6,000 men—a loose and undisciplined body, but every man of them a tough and hardy soldier. It was to the Arabs alone those princes looked and placed their dependence on. Their own troops fled and abandoned them, seldom or ever daring to meet our smallest detachment.

Nothing can exceed the horror and alarm with which some of our native troops view the Arabs. They will meet and fight them in the open day under their own officers; but if attacked by night if detached from their European officers, and even under their native officers or employed in defence of a post against a sortie or other attack, they quickly become panic struck and fly in every direction."

Of the British troops of that time it is scarcely necessary to speak.

British troops. They maintained the best traditions of the army, and they and they alone accomplished the downfall of our enemies, who seldom attacked them or awaited their assault. Their deeds are emblazoned on every page of history.

The native regiments fought well on occasion when led by British officers, and supported by British soldiers.

Character of the Native Army.

It is commonly supposed that the native army, and especially the Madras Army, has degenerated since those days. Such a supposition is a fallacy. The native Madras troops in the employ of the Company were no better than they are in our time and probably not so good. When opposed to a timid and contemptible enemy they could render a good account of themselves. But it was invariably found necessary to place the British troops in the fore front of the battle. On these latter fell the brunt of the fighting, and it was sometimes even deemed advisable to attach a British company to each native regiment in order to supply them with those qualities in which they were deficient.

Their physical attributes at the commencement of the century do not appear to have been of a high order. Thus the observant writer whose interesting remarks on the Arabs are quoted above tells us that "the Madras and Bombay native corps are generally composed of men who are as fit for boxers as they are for soldiers; many of them not equalling in muscular strength an European boy of 12 years' old, and scarcely able to stand the shock of the musquet. The whole of the native cavalry on these establishments are subject to the same observation; many of whose accoutrements, sword, and dress would nearly equal the weight of the man himself. In such hands, setting hearts aside, such an engine as a British musquet or sword is absurd on the face of it."

Such were the forces of the powers which were about to engage in a conflict for what was virtually the mastery of India.

When the campaign opened there was a subsidiary force of native troops under British officers at Poona and another at Nagpur, which had been placed there under the terms of treaties with the Peshwa and Bhonsla respectively.

The Marquis of Hastings, Governor-General and Commander-in-Chief, now in 1817 organised a large army which, advancing from the north and south, was to close in upon and crush the Pindharis. At first apprehensions of a rupture on the part of the Peshwa, Baji Rao, and the Bhonsla—Appa Sahib—were not entertained. Sir John Malcolm had been sent on a mission to their courts and had reported favourably upon the pacific intentions of those princes—a circumstance which points to the difficulty of following the tortuous intricacies of Maratha intrigue, even by an official of such long experience in oriental methods of diplomacy.

For the destruction of the Pindharis it was determined to close in from every side upon their head-quarters on the Narbada. And for this purpose, and to prevent their escape as well as to deal with other eventualities, two armies were organised by the Governor-General—one in Northern India under his personal command and the other in the Deccan. The Grand Army was formed at Cawnpore in September 1817 in four Divisions. The Divisions of the Army of the Deccan commenced their movement in September, marching separately to their several destinations.]

These armies, the largest British forces that had ever been assembled in India, were composed of both British and native troops from all three Presidencies, and were constituted as follows :—

GRAND ARMY.

Commander-in-Chief—The Marquis of Hastings.

Commander.	Cavalry.	Infantry.
FIRST DIVISION.		
Major-General Brown ...	24th Light Dragoons. 3rd Native Cavalry. 7th Native Cavalry. Dromedary Corps.	87th Foot. Nine Battalions, Native Infantry.
SECOND DIVISION.		
Major-General R. S. Donkin ...	8th Light Dragoons. 1st Native Cavalry. Colonel Gardiner's Irregulars.	14th Foot. Three Battalions, Native Infantry.
THIRD DIVISION.		
Major-General D. Marshall ...	4th Native Cavalry. 2nd Rohilla Horse. 4 Rissalas, 3rd Rohilla Horse.	Six Battalions, Native Infantry.
RESERVE DIVISION.		
Major-General Sir D. Ochterlony ...	2nd Native Cavalry. 1 Corps of Skinner's Horse.	67th Foot. Five Battalions, Native Infantry.

ARMY OF THE DECCAN.

Commander-in-Chief—Lieutenant-General Sir Thomas Hislop.

Commander.	Cavalry.	Artillery.	Infantry.
FIRST DIVISION.			
Sir Thomas Hislop ...	22nd Light Dragoons.	The troop of horse Artillery and the Cavalry gallopers incorporated with it.	The Rifle Corps.
	4th Light Cavalry.	The Rocket Troop	The Royal Scots. (Flank Companies.) The Madras European Regiment. Six Battalions, Madras Infantry.
	8th Light Cavalry.		
SECOND DIVISION.			
Brigadier-General J. Doveton	6th Light Cavalry. Reformed horse.	Three Brigades, Horse Artillery. Eight guns, Berar Brigade. Detail of Hyderabad Artillery.	The Royal Scots. Five Companies, Madras European Regiment. Thirteen Battalions, Native Infantry.
THIRD DIVISION.			
Brigadier-General Sir J. Malcolm.	3rd Light Cavalry.	One Brigade Horse Artillery.	One Battalion, Madras Infantry.
	4,000 Mysore Horse.	Four guns, Ellichpur Contingent.	Two Regiments, Russell Brigade. Two Battalions, Ellichpur Contingent.
FOURTH DIVISION.			
Brigadier-General Smith ...	3rd Light Cavalry.	Three Brigades, Horse Artillery.	65th Foot. One Battalion, Madras Infantry. Four Battalions, Bombay Infantry.
FIFTH DIVISION.			
Lieutenant-Colonel J. W. Adams.	5th Native Cavalry. 6th Native Cavalry. 1st Rohilla Cavalry.	Three troops, Native Horse Artillery.	Six Battalions, Native Infantry.
RESERVE DIVISION.			
Brigadier-General Munro ...	22nd Light Dragoons.	Detachment, Madras Artillery.	European Flank Battalion.
2nd-in-Command—	7th Light Cavalry.		Four Companies, Madras Rifle Corps.
Brigadier-General Pritzler.	7th Madras Cavalry.		Two Battalions, Native Infantry.
GUZERAT DIVISION.			
Major-General Sir W. G. Keir	17th Dragoons.	.....	47th Regiment. Two Battalions, 7th Regiment. Grenadier Battalion. 1st Battalion, 8th Regiment.

[In addition to these forces there were at Poona, where Mr. Mountstuart Elphinstone was Resident at the Court of Baji Rao, Peshwa, a detail of native artillery and two battalions of native infantry, and at Nagpur the Resident's (Mr. Jackson's) escort of two battalions of Madras Infantry, and a small detail of European Artillery, and three troops of the 6th Bengal Cavalry.]

The operations about to be undertaken were to occupy an extensive region, embracing every diversity of physical features, and characterised by considerable varieties of climate. This area stretched across India from the river Jumna on the north to the Kistna on the south. It was crossed by ranges of rugged mountains, clad with dense forests whose solitudes were rarely disturbed by the presence of man, and culminating in tall peaks crowned by massive forts, hoary with age, and bristling with guns. There were rich alluvial plains, dotted with villages and large and populous cities, and watered by mighty rivers. Within the limits of this theatre of war were many native states and some British territories. It was inhabited by peoples of many races and many tongues. Pathans, Marathas, and Rajputs represented the civilisation of the Orient. Aboriginal Bhils and Gonds shared with savage beasts the fastnesses of forest and mountain.

[Not only the hostility of man, but the forces of nature, had to be encountered and overcome. Difficult passes over the mountains, worn by rushing torrents and dark with jungle, had to be traversed by great armies with all their baggage. After heavy rainfall even water-courses that had previously been empty were rendered temporarily impassable, and the rivers took days to shrink to their normal proportions, whilst the soil in many parts of the country became so soft as to render the progress of an army a most difficult operation. Death lurked in many shapes. Cholera followed in the track of the troops, and fever claimed numerous victims. Even the wild beasts with which the jungle was infested took their toll from the advancing army.*]

March of the British Armies.

During October and early November the Divisions of the two armies were disposed as follows :—

Of the GRAND ARMY the—

First Division marched to the Sind.

Second Division marched to the Chambal.

Third Division was disposed north of the Eastern Narbada.

A Detached Force under Brigadier Hardyman was placed on the extreme left astride of the Narbada.

Reserve Division had its head-quarters at Rewari to control Amir Khan.

* Note.—During the march of the Army of the Deccan through the dense jungles on the bank of the Tapti river many camp followers were carried off by tigers, and a sepoy of the advanced guard was attacked and killed by one of these animals.

By the distribution of the forces on the Sind and Chambal Sindhia was enclosed and cut off from his allies. He was thus reduced to submission, and was obliged to conclude a treaty ceding the forts of Hindia and Asirgarh to the British, and to supply a contingent of troops for use against the Pindharis.

In the meantime the ARMY OF THE DECCAN had been advancing. [Although encumbered by baggage and camp followers (200,000 of the latter are said to have accompanied an army of 8,000 men) it made rapid marches through the dense jungles on and beyond the Tapti river and by the middle of November] the—

First and Third Divisions were concentrated at Harda. And disposed to hold the fords of the Narbada.

Second Division with head-quarters at Malkapur watched the Berar Ghauts.

Fourth Division marched to Khandesh, filling the space between Poona and Berar.

Fifth Division was placed at Hoshangabad.

Reserve Division was disposed between the Bhima and Kistna rivers.

In addition to these arrangements, the Madras Government established a chain of defensive posts from the most western point of the British Frontier on the Tumbudra, and along that river to its junction with the Kistna. Thence the chain extended along the latter river to Chintapili and along the Eastern Ghauts to the Chilka Lake. These posts were established at various distances in rear of the line of frontier, and threw forward small parties to the passes of the rivers and hills in their front. The number of troops employed on this service amounted to six squadrons of dragoons, six squadrons of native cavalry, nine battalions of native infantry, besides five thousand Mysore horse and foot, who continued the chain to the east. This force, distributed along a line of eight hundred and fifty miles in length, necessarily reduced the strength of each post to a small number. Experience, however, had shown that the Pindharis could be deterred by the smallest party of posted infantry, and that they could be beaten off by the unexpected attack of a single company.

The various events connected with his dealings with the British
Events at Poona. had fostered a feeling of implacable hatred

in Baji Rao, Peshwa, who found himself reduced almost to a condition of vassalage. Moreover, in 1817, his personal relations with Mr. Elphinstone, the Resident, appear to have become greatly strained. In October of that year the Maratha Chief assembled large bodies of troops at Poona and adopted a threatening attitude; early in November he demanded the withdrawal of the European troops, and on the 5th he advanced to attack the Residency and Cantonments.

The fears of the Peshwa, who was distinguished for personal
Battle of Kirki. cowardice, had fortunately induced him to

defer his attack, thus giving time for the garrison to be reinforced by the Bombay European Regiment and

a battalion of native infantry; the total force now consisted of the Bombay European Regiment, a detachment of the 65th foot, a detachment of native artillery, the two battalions 1st and 6th and one battalion 7th Bombay Native Infantry, and Major Ford's auxiliary battalion, the whole under command of Lieutenant-Colonel Burr. The cantonments had been withdrawn to a position at Kirki, and on the approach of the enemy Mr. Elphinstone abandoned the Residency at Sangam and joined the troops.

Colonel Burr wished to await the Maratha onslaught, but Mr. Elphinstone, who had ridden beside Wellesley at Assaye, well knew the value of a bold attack when dealing with this contemptible enemy, and at his instance the British line moved forward with the European Regiment on the right and the 7th Bombay Infantry on the left. The Maratha horse were advancing over the plain in countless numbers levelling the hedges and standing corn as they passed over them, whilst the earth shook with the tramp and clatter of their feet. They charged down upon the British right, but swerved off on seeing the Europeans there, having a wholesome dread of the white faces, and attacked the 7th Native Infantry, who had advanced beyond the line in pursuit of a battalion of the Peshwa's infantry under the command of a Portuguese officer, named Pinto. The 7th fell into some confusion, but were rallied by their officers and supported by two companies of the British regiment which were sent forward for that purpose, and order was thus restored, and the Maratha horse were driven off with heavy loss. The hostile infantry, with the exception of Pinto's corps, had not arrived, and seeing the retreat of the cavalry they withdrew to the city without coming into action.

This combat is noteworthy as showing the innate cowardice of the Marathas, their dread of European troops, and the value of the latter in saving native regiments from disaster. The Maratha Army amounted to 18,000 horse, 8,000 foot and 14 guns, whilst the British force numbered only 2,800, of whom 800 were Europeans. The loss on the British side was 19 killed and 67 wounded; the enemy lost some 500 men, including Mor Dixit, the Peshwa's Minister, who was mortally wounded by a discharge of grapeshot.

Whilst the battle was in progress, the Peshwa destroyed the Residency and Cantonments, and on its conclusion withdrew to Poona. Various atrocities were committed by the enemy during this period, including the murder of two officers who were marching from Bombay.

In the meantime the 4th Division of the Deccan Army under Brigadier-General Smith had been advancing to the relief of the Resident, and arrived on the 13th November in the vicinity of Poona, where it took up a position covering Yellora ford across the Muta-Mula river, between the Kirki bridge and a small hill on the left bank of the stream.

The British General appears to have displayed great vacillation, and his hesitation to attack, owing to some difficulty in getting his guns across the ford, enabled the Peshwa to escape, and an opportunity was lost of striking a decisive blow which would probably have averted the necessity for the pursuit of many months which followed.

The enemy fled towards Satara under cover of a detachment of infantry, which maintained a contest with the Combat of Yellora ford. British during the 16th but was at length driven off with loss. The casualties on the British side amounted to 15 killed and 86 wounded. After this action Poona was occupied without opposition, and some time was taken up in settling affairs there before the commencement of the pursuit of Baji Rao.

It is now advisable to advert to affairs at Nagpur where matters Affairs at Nagpur. had assumed a threatening aspect.

The news of the defection of the Peshwa had travelled with the usual rapidity of native intelligence all over India. It was followed by that of Appa Sahib, Bhonsla of Nagpur. In October agents of Chithu, a celebrated Pindhari Chief, had been secretly received by the Bhonsla; in November a dress of honour for him arrived from the Peshwa and was presented in open Durbar. On November 25th Mr. Jenkins, the Resident, perceiving the evidently hostile attitude of Appa Sahib, sent a part of his force to occupy the double hill of Sitabaldi, whilst messengers were sent for assistance to General Doveton, Commanding the 2nd Division of the Deccan Army.

The small garrison of Nagpur consisted of 3 troops, 6th Bengal Cavalry; detachments of the Madras Body Guard and Fort Artillery; the 1st Battalion 20th and 24th Madras Native Infantry; the Resident's escort; and Major Jenkins' battalion—a total of some 1,400 men under command of Colonel Scott.]

Battle of Sitabaldi.

The hill of Sitabaldi consists of two eminences connected by a low and narrow ridge three hundred yards in length. Owing to the rocky nature of the ground it was impossible to entrench the summits. The suburbs of the city approached close to the base of the smaller hill which was occupied by the 24th Madras Infantry, whilst the remainder of the infantry and guns were posted on the larger eminence, and the cavalry was in rear of the Residency. In front and on both flanks of the British position was extended a village of mud huts in which the enemy assembled with their guns. The following graphic description of the battle is taken from Grant Duff's *History of the Marathas*:—
 "In the evening, as the British picquets were about to be placed, a party was fired upon from the village, at the bottom of the lower hill; but, under the possibility of a mistake, they forbore returning it until, upon a continuance of the aggression, they gave their fire and retired upon the smaller hill under a heavy discharge of matchlocks, which became the general signal for an attack on the British position. A smart fire was maintained on both sides till two o'clock in the morning, when it slackened on the part of the Marathas, but was renewed with great fury with cannon and musketry at daylight. The heaviest loss which the British had hitherto sustained was at the smaller hill. Frequent attempts had been made by the Arabs to carry it, and that post had been, in consequence of the slaughter, repeatedly reinforced. At last by the accidental explosion of a tumbril some confusion was created, of which the Arabs took immediate advantage, charged up the hill sword in hand, carried it, and immediately turned the gun

against the larger hill, where the casualties became distressingly severe. Emboldened by their success, the enemy's horse and foot closed in from every direction, and prepared for a general assault. To add to this appalling crisis, the Arabs got into the huts of the British troops, and the shrieks of the women and children reached the ears of the sepoys. The Residency grounds, where Captain Fitzgerald (commanding 3 troops, 6th Bengal Cavalry) was posted, were also attacked; guns were brought up and bodies of horse threatened to break in. Captain Fitzgerald had repeatedly applied for permission to charge, and was as often prevented by orders from the Commanding Officer; but seeing the impending destruction, he made a last attempt to obtain leave. Colonel Scott's reply was—"Tell him to charge at his peril"—"at my peril be it," said the gallant Fitzgerald on receiving this answer, and immediately gave the word to advance.*

As soon as he could form clear of the enclosures, he charged the principal body of horse, drove them from two guns by which they were supported, pursued them to some distance, cut a body of infantry accompanying them to pieces, and brought back with him the captured guns. The infantry posted on the hill witnessed this exploit with loud huzzas; the greatest animation was kindled amongst them: it was proposed to storm the smaller hill as soon as the cavalry returned, but another explosion of the ammunition having taken place amongst the Arabs on the south hill, the same accident by which it had been lost, men and officers mingling together rushed forward: irresistible, under such an impulse, they carried everything before them, pursued the Arabs down the hill, took two of their guns, spiked them, and returned to their posts. The Arabs again assembled, and evinced a determination to recover their ground; but as they were preparing to advance, a troop of cavalry under Cornet Smith charged round the base of the hill, took them in flank, and dispersed them. The British troops now advanced from the hills, drove the infantry from the adjoining huts, and by noon this trying conflict had wholly ceased." [The British lost in this action 119 killed, including 5 European officers and a Sergeant-Major, and 243 wounded, including 13 British officers. The loss of the enemy, who had 18,000 men and many guns, was about the same; but only some 3,000 Arabs and a small body of Maratha horse took part in the attack.]

[This battle is remarkable for its successful issue, as there were no British troops present. There can be no doubt that the fight was maintained owing to the exertions of the British officers, who lost so heavily, whilst the whole force would most assuredly have been destroyed but for the gallant charge of the Bengal Cavalry, which not only struck terror into the enemy, but inspired the defenders to make renewed exertions.]

The enemy appear to have been entirely disheartened by this repulse; they made no further attack, and Appa Sahib made overtures to the Resident, declaring that the outbreak had occurred against

* Note.—According to the latest account of Majuba Hill, a similar assumption of responsibility on that occasion might have saved the day, *vide Ian Hamilton's March*. By W. Spencer Churchill.

his wishes. The latter, however, refused to treat. Reinforcements came in from every direction, and on December 16th General Doveton arrived with the Second Division of the Deccan Army.

The Rajah now came in, and consented to surrender all his artillery, but on the British advancing to take possession, the hostile guns opened fire. A

Battle of Nagpur. A company of the Royal Scots had been attached to each native regiment. Line was formed, the enemy's batteries were taken by assault, and his cavalry was dispersed by the horse artillery and cavalry, and pursued for some miles. The garrison of Nagpur, consisting of 3,000 Arabs, still held out in the city, which was surrounded by a defensible wall with round towers.

An attack made on the city was repulsed by the defenders with heavy loss; the causes of failure are rather obscure; but the troops do not appear to have behaved very well. The loss in the battle and assault on the city amounted to 92 killed and 337 wounded, the greater part of the casualties taking place during the attempts to storm the city from the 19th to 24th December. The Arabs eventually capitulated, receiving a large sum of money, and permission to disperse in the country south of the Tapti river.

Whilst these events were taking place General Hardyman had moved down the Narbada, with a view to assisting the troops at Nagpur.

Action at Jabalpur.

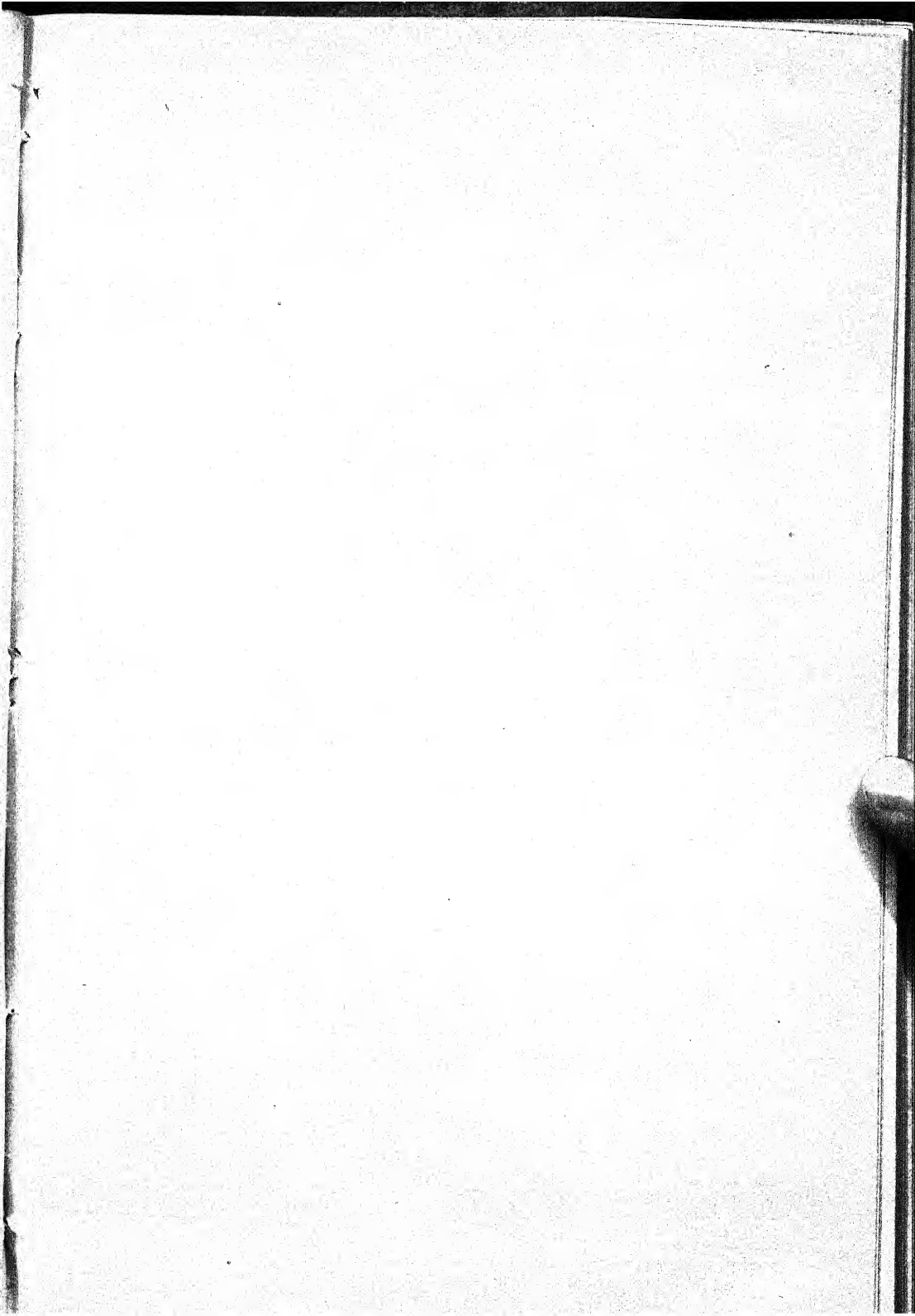
He advanced against Jabalpur with the 8th Bengal Cavalry, the 17th Foot and 4 guns; and on the 19th December came in contact with the Marathas who, with 1,000 horse, 2,000 foot, and some brass guns, were drawn up in a strong position in front of the town. The enemy were soon driven from their position with the loss of all their guns, and during the night they abandoned the town and fort with all their stores.

It is now time to return to the movements of the main body of the Movements of Sir Thomas Army of the Deccan, consisting of the Hislop.

First and Third Divisions, under the command of Sir Thomas Hislop, which had concentrated at Harda in the middle of November. The first measure was the dispersal of the Pindharis in Southern Malwa which was accomplished by Sir John Malcolm's Division in co-operation with the Grand Army. The Pindharis as usual did not show fight, and were dispersed in all directions with the loss of much of their baggage and some guns. A large body of them under the celebrated Chithu escaped for the time being, and eventually joined Holkar's Army on the Sipra river. Early in December Sir Thomas Hislop and Sir John Malcolm effected a junction of their forces at Ujjain. On the 14th of that month the army moved in the direction of Mahidpur, in the vicinity of which it arrived on the 19th, having been considerably harassed *en route* by the hostile predatory horse, who lost no opportunity of cutting off followers and baggage.

The advance of the British armies and the consequent negotiations with the Agents of Holkar gave rise to

Situation in Holkar's camp. much dissension in the latter's camp, where there existed a peace party and a war party. The Regent Tulsi Bai vacillated between the two factions, and was finally seized



and decapitated on the river bank by those who were in favour of opposing the British arms, and whose counsels consequently prevailed. Negotiations were still carried on, but the insincerity of the Marathas was so apparent that they were not taken seriously by the Political Officer, Sir John Malcolm.

[On the morning of December 21st the British Army advanced in the direction of Mahidpur on the Sipra river, moving through a somewhat hilly country, where the Pindharis hovered about the flanks and rear like a swarm of mosquitoes, carrying off camels and bullocks. In those days, as in our own time, the cavalry was too heavily weighted. An eye-witness of the scene says:—"We could see the Pindharis flying like the wind, at a considerable distance off, our cavalry having no chance with these fellows, even on an open plain. The Pindharis, unencumbered with accoutrements, heavy saddle, etc., will gallop round and round the most active of our troopers; and his very horse seems to partake of the master's cunning and dexterity, and to know exactly the moment for a quick and timely retreat."*]

A reconnaissance under Sir John Malcolm was soon pushed on to the river, where it took possession of the fort and of a small village on the bank, driving in the enemy's light cavalry which swarmed on the plain between the two armies. The enemy's position on the far bank of the river, about 800 yards beyond the stream, was now exposed to view. It was indeed an imposing sight. [The hostile infantry, 5,000 strong, stretched across from Mahidpur to the river where their right rested. Their front was covered by nearly a hundred guns in line. Beyond these a dense mass of 30,000 horse crowded the plain. The British Army did not number more than 5,500 men, but there were some present who had fought at Assaye fourteen years before, and knew well that a bold attack would be effective against any Maratha host, however numerous.]

The rifle corps and a portion of the 16th Madras Infantry quickly crossed the river to drive in the enemy's matchlockmen, and were followed by the horse artillery. The enemy's guns immediately opened fire, and the horse artillery was soon overwhelmed, whilst the infantry, being badly disposed, remained in inaction for some time, exposed to a heavy fire, and suffered considerable loss. The rocket troop also attempted to discharge some missiles at the enemy, but the greater part burst or expended themselves among our own men, causing as much confusion as the hostile fire.

The situation appeared precarious when Sir Thomas Hislop's main body arrived upon the scene with the light brigade in the centre, and the cavalry protecting the flanks. Having reached the river bank, left in front, the brigade actually counter-marched under fire, in order to bring their right forward, losing heavily during this manœuvre.†

* Note.—The question of reducing the weight carried by the cavalry horse would appear to be one of the most important in military reform. The tactics of the Cossacks described by the present writer in the *United Service Magazine* for September 1896 are somewhat similar to those of the Pindharis, but are more dangerous and characterised by greater boldness and enterprise.

† Note.—A somewhat similar manœuvre is said to have been carried out by one brigade at the battle of Colenso under fire. The tactics of Frederick The Great are obviously unsuited to the conditions of modern warfare.

The European troops were at once launched against the enemy's line, followed by the native regiments, and were received with a discharge of grape, chain, and round shot which by its weight alone staggered for a moment the advancing line. But with a cheer the British soldiers charged straight at the enemy's artillery. Their onslaught was irresistible, and though the hostile artillery men stood bravely to their guns, they could not withstand the assault, and were nearly all killed, whilst the guns fell into the hands of the victors. Holkar's infantry had already fled at the commencement of the action, and the cavalry followed suit; such was the indignation of the Maratha artillery at this defection of their comrades that they actually turned round some of their guns, and fired a salvo into the ranks of their fugitive friends.

The guns being taken, the cavalry now crossed the ford and took up the pursuit of the enemy.

Young Holkar had fled in the early part of the action, but the Mysore horse overtook and captured his regalia and jewels to the value of 70 or 80 lakhs of rupees, whilst the Maratha camp, which had been left standing, also fell a prize to the victors. Numbers of the enemy were slain, and the country for many miles was strewn with their dead. The action occupied only two hours. It commenced at 9 in the morning, and by 11 o'clock the Maratha hosts had melted from the field like snow from the face of the desert.

The enormous booty captured on this and other occasions during the war formed the subject of an acrimonious controversy which was not settled for many years.

The British loss in this battle amounted to 174 killed and 612 wounded. Over two hundred of the wounded died afterwards, apparently owing to unsatisfactory treatment. A contemporary writer says: "At Mahidpur in the field hospitals there was scarcely a bit of dressing plaster for the wounded officers; none for the men; nor was there a single set of amputating instruments besides those belonging to individual Surgeons; some of these without them: and we have the best authority for saying that, of those amputated, from the bluntness of the knives and the want of dressing plaster alone, two out of three died in hospital."*

The medical officers in those days contracted for their own medicines and stores. In the early years of the century many of them retired with immense fortunes.

The enemy's loss at Mahidpur amounted to some 3,000 men and 76 guns. Of these latter, 60 were brass, and were furnished with port-fires, elevating screws, buckets, etc., of the same pattern as our own.

The battle of Mahidpur cannot be said to have been conducted with conspicuous skill. Sir John Malcolm, who led the British attack, seems to have displayed more gallantry than science. By a movement under cover of the far bank of the river, which afforded ample protection, the enemy's flanks might have been turned, and a frontal attack, which involved heavy loss, might have been avoided.

* *Note.*—In those days armies in the field were not accompanied or followed by irresponsible busy-bodies, so there was no "hospital scandal." They were also fortunate in having no war correspondents to picture themselves with pen and pencil in the midst of bursting shells, to describe their own narrow escapes, and criticise the operations of the Generals.

[On the 28th December Sir John Malcolm moved forward in pursuit of the enemy with a light detachment, and the main army marched in the direction of the Chambal river. Holkar, however, did not show fight again, but opened negotiations which terminated in a treaty concluded on the 6th January 1818, by which the Rajput States were set free, and the Pindharis were abandoned to their fate.] The sub-

Fate of the Pindharis.

mission of Holkar was followed by that of Amir Khan. The Pindhari freebooters were given no rest, but were pursued by the Guzerat Division, and by the various detachments of the Grand Army, until none remained except the famous Chithu with a few hundred followers. After a long pursuit these were gradually dispersed, until their unfortunate leader was left alone in the jungles on the Tapti river. Here he fell a victim to a man-eating tiger, his fate being ascertained when the monster was followed to its lair and the unfortunate Chithu's head discovered and recognised.

[The battle of Mahidpur brought the regular warfare to a close, but a great deal still remained to be accomplished.] Many forts had to be reduced; the Peshwa Baji Rao was still at large with a considerable following; and Appa Sahib of Nagpur was intriguing with that fugitive prince. The submission of Holkar was followed by two years of guerilla warfare before the country was finally pacified.

After effecting a junction with the Army of Guzerat and visiting Indore, Sir Thomas Hislop again turned to the south early in February. His army was harassed by Bhils while descending the pass in the mountains north of the Narbada, but these aborigines, who were armed principally with bows and arrows, were easily driven off. The submission of several forts was received, and detachments were left to occupy them, but on approaching the fort of Talner on the Tapti river the advanced guard was fired on. This place was to have been delivered by treaty with Holkar, but there appears to have been some misunderstanding with the Brahmin Commandant. Negotiations for surrender followed after some little firing, but several officers who had entered the fort to receive the submission of the garrison were attacked and killed by the Arabs. Thereupon a general massacre took place; the whole garrison was put to the sword, and the unfortunate Commandant was hanged from the battlements.

Soon after this action Sir Thomas Hislop's force was broken up, a part of it being attached to General Doveton's Division, and a portion detached consisting of two companies of the Royal Scots; three companies of the Madras European Regiment; two battalions of Madras Native Infantry, with a battering train of two 18 and two 12-pounders and a few mortars, the whole under command of Colonel McDowell.

It is now advisable to revert to the operations of the Fourth Division under Brigadier-General Smith, who, on the 21st December 1817, commenced his pursuit of the Peshwa.* The latter first fled in the direction of

* Note.--"Brigadier-General Smith, during his pursuit of Baji Rao, formed one of the Bombay Native Corps into a light corps, and mounting them on small horses, thus managed to keep always at hand with the cavalry, a body of infantry, in the event of overtaking the enemy. This system might in India be much improved upon, particularly in desultory warfare, such as with the Pindharis." *Maratha and Pindhari Campaign*. By *Carnaticus*, published in 1820.

✓ Satara, but turned north again from the Kistna river to Nasik on the Godavery, and thence advanced in the direction of Poona, where Colonel Burr was in command. The advance of Baji Rao excited some alarm at the Deccan Capital, and Colonel Burr re-called the detachment at Sirur to reinforce his garrison. This detachment, which ✓ marched on 31st December, consisted of the 2nd Battalion, 1st Bombay Infantry, under Captain Staunton, two guns with twenty-four European artillerymen and a Sergeant under Lieutenant Chisholm, Madras Artillery, and 250 Reformed Horse under Lieutenant Swanston.

✓ At 1 o'clock on the 1st January the detachment reached the high ground overlooking Koregaon, 27 miles from Sirur. An imposing scene was presented to the little force. In the valley below lay the whole of the Peshwa's army—20,000 horse and 8,000 foot, encamped on the right bank of the Bhima above the village of Koregaon, under the walls of which the road to Poona crossed the river by a ford.

Captain Staunton at once occupied the village, but failed to seize the most commanding portion of it,

Defence of Koregaon.

which was immediately taken by the enemy. The Peshwa launched the flower of his troops—Arabs, Gusseins, and regular regiments to the attack, which was made by some 2,000 men who were constantly reinforced during the day. The British six-pounders were so disposed as to cover the gateway, and the Arabs were slain in dozens by discharges of grape as they attempted to rush the entrance. Still they pressed fiercely on, and when most of the Europeans had been struck down round the artillery, the guns were carried, and the remainder of their defenders slaughtered, including Lieutenant Chisholm, whose head was cut off and carried to Baji Rao.

Hearing that the guns had been taken, Lieutenant Pattinson of the 1st Bombay Infantry, who was lying mortally wounded, rose and led a charge of his grenadiers against the Arabs, recapturing the guns, and slaying numbers of the enemy. Lieutenant Pattinson was a man of gigantic stature as well as heroic disposition, being 6 feet 7 inches in height, and immensely powerful. Armed with a musket he himself brought down five of the enemy with the butt end of it, and his example so excited the valour of the troops that the enemy was beaten off by night-fall. In this action not only the combatant officers, but the Assistant Surgeons Wyngate and Wyllie, led their troops to the attack again and again, and there can be no doubt that the presence and example of the Europeans alone saved the entire force from destruction. Lieutenant Chisholm and Surgeon Wyngate were killed, and Lieutenant Pattinson died next day. The other officers were wounded, and of the 24 European artillerymen, 12 were killed and 8 wounded. Of the natives, 50 were killed and 105 wounded. The assailants lost five or six hundred men. They ✓ evacuated the village during the night, and retreated at dawn on hearing of General Smith's advance. After this repulse Baji Rao fled towards the Carnatic, but being disappointed of his hope of assistance from Mysore, he again turned towards the north, in the direction of Sholapur, and thence bent his steps towards the Tapti, in order to obtain the aid of Appa Sahib of Nagpur. The pursuit does not

appear to have been very skilfully conducted in its early phases, but it was afterwards more vigorously taken up by General Doveton. Baji Rao himself was heard to say to his Minister "as for General Smith I don't care about him; I can turn him and drop him whenever I please; but for that little fellow, General Doveton, he keeps so close on me that I can scarce call a halt my own."

Nevertheless General Smith did on one occasion succeed in coming up with the retreating enemy at Ashti ✓
 Combat at Ashti.

with the 7th Bombay Cavalry and the 22nd Dragoons. A party of the Marathas, headed by Gokla, a brave and famous chieftain who had been with Wellesley in 1803, charged down upon the native cavalry and caused some disorder; but the 22nd Dragoons galloped along the rear of the 7th and, attacking the Marathas, dispersed them in a few minutes with the loss of their leader, who fought bravely to the last and was killed by a dragoon.

At length, after a chase lasting many months, Baji Rao with 8,000 followers was hemmed in near Asirgarh by General Doveton and Colonel Adams, where, after protracted negotiations, he surrendered to Sir John Malcolm. He was deposed from the throne of Poona, where the Rajah of Satara was installed in his place, but placed in complete subordination to the British Government. Baji Rao was given a pension and a place of residence at Bithur, where he resided until 1851 when he died, leaving his fortune and legacy of undying hatred towards his conquerors to his adopted son, the infamous Nana Sahib of Cawnpore.

Mention has been made of a force under Colonel McDowell having been detached by Sir Thomas Hislop on the reorganisation of his army. This force moved into Khandesh after having reduced several fortresses with but little opposition.* But there remained the great stronghold of Malegaon, the chief seat of the Arab settlers in India. The day before the arrival of Colonel McDowell in front of this place, the Commandant paid him a visit, and in the course of the conference said that there would be no difficulty in at once occupying it. The next day, however, May 15th, the Arabs attacked two pioneers who were approaching the walls, and it became evident that a regular siege would be necessary to reduce the fortress, which was of immense strength, with ditches and several massive walls.

After a breach had been effected, a gallant attempt to carry the outer enclosure by assault was made by Major Andrews at the head of 60 men of the Madras European Regiment, who drove the Arabs from a grove of trees they had occupied, but were carried too far by their impetuosity, and were withdrawn after suffering some loss.

Colonel McDowell had pitched his camp within musket shot of the wall, and for some days obstinately refused to shift the tents, although some loss was caused by the fire of the Arabs. On the 29th May another unsuccessful attempt was made upon the fort by a new breach, but the Arabs fought bravely and the assailants were unable to attain their object. At last, after nearly a month's hard

* Note.—To recount fully the whole of the operations of this war would be to fill a large volume. In the present—

work involving a loss of 5 officers killed and 8 wounded and 300 men killed and wounded, the defenders to the number of 270 Arabs and 40 Hindustanis capitulated, and laid down their arms.* The Arabs seemed to despise the sepoys. They were interned at Surat, to the number of 200, where they gave such trouble that the officer in command of a post in the vicinity, although there was a garrison of 800 native troops, wrote that he was in some apprehension of an attack. When told that they would be compelled to obedience by force of arms, the Arabs replied—"We care little for you, or about your sepoys; we see, it is true, you have a number of Murghis or fowls, but we can't perceive any cocks, or the true fighting-breed, amongst you."

Whilst Colonel McDowell was employed in Khandesh, other forces under Generals Munro and Pritzler and other officers, were employed in reducing the fortresses in the Southern Maratha country and the Konkan. Among other important places Sholapur was taken after a five days' siege, whilst several places, including the fort of Chanda, fell into the hands of the British near Nagpur. The year 1819 still found desultory operations in progress. The intrigues of Appa Sahib at Nagpur had necessitated his arrest, but he escaped with the connivance of some sepoys who deserted with him, and fled to Asirgarh in February. In January the fortress of Nowah† in Berar

* Note.—"Colonel McDowell generously returned the small daggers to many of the Arabs, these weapons being generally handed down from father to son, and considered almost sacred by them." *Pindhari and Maratha War By Carnaticus.*

† Note.—Concerning this siege, there is an interesting note in *Carnaticus'* book on the war, published in 1820:—"The services of the Russell Brigade have been of late very distinguished; and the siege and reduction of the fort of Nowah by Major Pitman, Bengal Army, in the country of the Naiks, north-east of Hyderabad, by that brigade with two heavy guns, a detail of artillery, and a party of irregular horse, in March last, for smartness of execution and brilliancy of achievement, stands perhaps unparalleled by any similar affair during the whole of the late war. The above troops sustained for many days a very heavy loss before it; they were, however, indefatigable, and pushed their works to the very counterscarps, which they blew in, and assaulting the enemy to nearly 500 men at the breach, and in the fort they carried the place by sheer dint of the bayonet. Yet we have never seen any public acknowledgment of that service, not that it was deemed unworthy of due praise, but perhaps because the corps by which it was achieved did not belong to the regular army. Such a service, however performed under the direction and at the example of British officers, certainly merited some public testimony, and infinitely more so than the reduction of Mundelah and Chanda, where we verily believe there was more paper consumed in the compliments on those occasions than was expended in the cartridges discharged, two or three men being killed and half a dozen wounded at the former place, and at the latter, such was the difficulty of the breach, that the horse artillery actually galloped over it, the enemy flying and throwing themselves off the walls in every direction. We should be glad to see the copious stream of public encomium in India somewhat curtailed, and confined to hardy and essential services. A public acknowledgment of the Government should be a rare and distinguished mark of public approbation; whereas of late, from the mass of names contained and re-echoed in the general orders, it is as difficult to discover as to remember the particular merit of any individual." These remarks are quoted to show the prevalence of an abuse which happily does not exist in our time. There were then, however, few medals and fewer orders, and doubtless a mention in despatches had frequently to take the place that which would now be occupied by some other distinction.

The Court of the Directors of East India Company, in commenting on Sir Thomas Hislop's despatches, remarked:—

"It is natural that in weighing the effect of a recommendation, not only the rank and command of the superior officer by whom it is bestowed should be considered, but also the facility, cautiousness with which such officer bestows his praise. The Commander who imagines that by mentioning in laudatory terms every field officer who has done his duty, he is rendering justice, or even doing a favour to them all, is essentially mistaken. He is, on the contrary, perhaps doing a great injustice to the

was besieged and taken by the Russell Brigade—a force afterwards converted into the Hyderabad Contingent.

The fortress of Asirgarh, standing on a spur of the Satpura mountains, 14 miles north of the Tapti river, still remained to be reduced. This fortress belonged to Sindhia, and should have been delivered up to the British according to the terms of the treaty with that prince. But the Commandant, Jeswant Rao Lar, determined to defend the post, and had, moreover, received the fugitive Raja of Nagpur.

The task before General Doveton and Sir John Malcolm, who advanced against Asirgarh in the middle of March 1819, was not an easy one. The country around was wild and difficult. *Carnaticus* says: "To the west the approaches were through the most dreadful ravines, and over hills covered with jungle, and haunted by thousands of tigers. There was scarcely a day when some of our followers and people were not carried off by them; even our troopers were attacked, and on one occasion one of them was struck off his horse and carried away." On the 18th the native town adjoining the fort was taken, but it was not until the 11th May that the place capitulated. The loss on the British side was considerable, amounting to 48 killed and 286 wounded, but of these casualties a great number was caused by the explosion of one of their own magazines. Appa Sahib made his escape either before or during the siege, and took refuge in the Punjab.

The fall of this stronghold virtually brought the campaign to a close, although some minor actions took place during the next month, and many inferior fortresses in Southern India were reduced.

The strategical lessons of the war are obvious. The Grand Army formed a containing force, preventing egress of the enemy to the north, and keeping a watch upon Sindhia. Two Divisions of the Deccan Army were used for aggressive operations, to drive the Pindhars from their fastnesses, and to deal with Holkar. Another Division kept a watch upon Nagpur, and one on Poona, at the same time guarding the flanks of Sir Thomas Hislop's advance, whilst further south a skillfully disposed force guarded the Madras and Mysore frontiers and kept under observation the turbulent elements in Hyderabad. From a tactical point of view no great skill is manifest upon either side. The campaign shows that the nucleus of the fighting force consisted in the Europeans on the British side, and the Arabs on that of the Marathas. The following remarks made on the conclusion of the war by an officer who was present throughout the campaign with Sir Thomas Hislop's force are not only interesting but valuable, as pointing to a hitherto untapped source of recruiting:—

"Our Native Army requires to be looked into more than any other branch of our system in India; it should be weeded of sticks and shadows of men; and we should employ and entertain, in the best service in the world to them, men who could be relied on upon serious occasions. But in the present system, throughout the whole of the Indian Native Army.

there are at least 200 men in each battalion, select corps excepted, unfit altogether for the posts they are in, and for the purposes for which the State maintains them. Our native army is the most faulty of the military branch in India, and will be the first to crack and fall to pieces under trial. We should turn our attention to the introduction of a harder race of troops for our army than the majority of our native troops at present are. We should look to the coast of Africa, to Abyssinia, Madagascar, the Malay Islands, and even to the West Indies; corps of this description, disciplined as European corps, without any intermediate class of officers, which is a flaw in our Indian Army, would show themselves soldiers in contest as well as on the parade. Let us only look to a few incidents, and indeed, excepting Mahidpur and the attack made by Gokla at Ashti, the principal occurrences in the late campaign, and we must acknowledge that the odds were, if anything against us, wherever we met with anything like opposition, and wherever our enemies showed their faces instead of their backs to us.

At Nagpur in November 1817 the Arabs alone attacked us on the defence, and reduced us to the last extremity

The Arabs.

when we were saved by Captain Fitzgerald's charge. The Arabs attacked us at Koregaon, and would have certainly destroyed us had not the Peshwa withdrawn his troops on General Smith's approach. The Arabs kept General Doveton at bay with his whole army at Nagpur for several days, repulsing our attacks at the breach, and they gained their fullest terms. The Arabs worsted us for a month at Malegaon, and saved their credit.

They terrified the Surat authorities by their fame alone.

They gained their terms of money from Sir John Malcolm at Asirgarh. They attacked us bravely but unfortunately at Talner. They attacked Captain Sparke's detachment on the defence and destroyed it (a detachment of 120 Bengal sepoy). They attacked a battalion of the 14th Madras Native Infantry with two 6-pounders and compelled them to seek shelter in a village; and they gave us a furious wind-up at Asirgarh. Yet the whole of these Arabs were not 6,000. Separate now the above from the whole of the achievements in the late war, and we shall only find the Mahidpur artillery well served,* and a handsome charge made by Gokla on our cavalry. At the other affairs of Nagpur, Poona, Jabalpur, Chanda, and Sholapur, which stands above all these latter, all we were alarmed about was that the enemy would not stand, and leave us something to fight against. If our only object is to preserve the natives of India itself in due subordination to our Government, the native army is fully sufficient and efficient.

But we must now look to the possibility of hardier contests; we have now got our advance upon the borders of serious and brave nations. We shall in India every day become the envy of Europe more and more."

* Note.—We had to thank ourselves for the training of Holkar's artillery in the discharge of a part of our native artillery at the close of the former Maratha war, contrary to the advice of the Marquis Wellesley and Lord Lake. Hence that artillery attained a height of discipline and smartness of service equal to our own, and in every particular had their guns as well furnished as ours.

These remarks are interesting in the light of subsequent history, and many of them are equally applicable in our own time.

The results of the war are seen in the complete destruction of the Pindharis, the submission of Holkar, Sindhia, and Amir Khan, and the removal of the Peshwa, and the Bhonsla of Nagpur. Of the Rajput States the Marquis of Hastings himself wrote: "They have been delivered from an oppression more systematic, more unremitting, more brutal, than perhaps before trampled on humanity. Security and comfort established where nothing but terror and misery before existed; nor is this within a narrow sphere. It is a proud phrase to use, but it is a true one, that we have bestowed blessings upon millions."

The year 1819 witnessed the completion of the pacification of India as a result of the wise policy of the Marquis of Hastings.

What satisfaction he must have felt as he contemplated the effects of his action. Surely great men have a great reward! He found British prestige in India at a low ebb. He raised it to a pinnacle of glory that had scarcely been attained even by the illustrious Wellesley.

He came to a country racked by anarchy, where there was no security for life or property. He did not leave it until he had established peace and safety throughout the Peninsula. He consolidated an Empire; he released oppressed States and down-trodden peoples; he annihilated a corrupt baneful effete polity which menaced the progress of western civilization; he reduced the Maratha Confederacy to a state of vassalage, and ensured British ascendancy from the Ganges to the Godavary. He was successful in diplomacy, and he triumphed in war.

All this required great effort and skilful measures. India was turned into a vast camp. The maintenance and movement of great armies over a wide theatre of operations called for careful organisation and masterly strategy; and the success which attended these undertakings proves that they were conceived and carried out with due consideration.

The history of Southern India since those days is sufficient evidence of the wisdom of the policy of the Marquis of Hastings. It is the history of eighty years of peaceful progress. The Pindharis are almost forgotten even in name. The Marathas have settled down to agriculture and other peaceful pursuits. For eighty years the villagers of Southern India, who in the early decades of the century found security only behind their fortified walls, have tilled their fields in safety, and no clash of arms has disturbed the quiescence of the country.

Baji Rao is still remembered. The villagers point out the places he passed during his flight, and some say that in the silent watches of the night they hear the beat of the hundred thousand hoofs of his myriad horse upon the plain.

Return of killed, wounded, and missing during the Maratha war.

Action.	Date.	KILLED.			WOUNDED.			MISSING.		
		European officers.	European men.	Natives.	European officers.	European men.	Natives.	Europeans.	Natives.	Total.
Kirki	5th November 1817.	...	1	18	...	1	66	...	...	86
Poona	11th to 16th November 1817.	...	5	10	2	13	84	...	...	114
Sitabaldi	26th to 27th November 1817.	5	1	113	13	2	128	...	4	366
Nagpur	16th December 1817.	...	8	26	...	31	76	...	3	144
Jabalpur	19th to 24th December 1817.	1	19	38	10	71	149	...	6	294
Mahidpur	21st December 1817.	3	17	154	35	98	471	...	1	779
Smith's Brigade	22nd November 1817 to 29th January 1818.	...	...	3	1	5	36	...	6	51
Koregaon	1st January 1818...	2	12	50	3	8	105	...	...	180
Jawud	29th January 1818	...	1	4	1	4	28	...	...	38
Talneir	27th February 1818	2	5	...	5	6	7	...	...	25
Belgaum	21st March to 12th April 1818.	...	5	6	...	1	11	...	...	23
Sholapur	10th to 15th May 1818.	...	3	8	4	44	34	4	...	97
Malegaon	18th to 29th May 1818.	5	7	22	7	48	120	...	...	209
Satanwari	8th to 10th June 1818.	1	1	9	1	8	67	...	...	87
Chanda	23rd May 1818 ...	1	4	8	4	7	44	...	...	68
Compta	18th September 1818.	...	...	4	...	...	57	...	...	61
Asirgarh	18th March to 11th April 1819.	1	8	39	12	85	184	...	...	329
Nowah	10th to 31st January 1819.	...	...	21	6	2	171	...	...	200
Rahri	13th February 1819	...	2	6	2	4	21	...	...	35
Kopaldrug	13th May 1819 ...	1	4	7	3	20	27	62
Minor actions	8	6	20	34	68
TOTAL	22	103	554	115	478	2,020	4	20	3,316

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THE LIMITATIONS OF INFANTRY FIRE CONTROL AND DISCIPLINE.

A LECTURE DELIVERED AT CAMP KHAR ON THE 7TH JANUARY 1901
BY CAPTAIN A. A. E. CAMPBELL, 25TH PUNJAB INFANTRY.

War is the great test of all military theory, organization, equipment and training. Under its severe scrutiny every nation has found out after each struggle with its foes the weak points in its armour, and a wise nation immediately sets to work to remedy defects, with the determination to do better next time.

The wars of the last few years have shown us that amongst other details our musketry training is not altogether satisfactory. We often now hear it said and see it written both by irresponsible and even by responsible persons that our men are taught all wrong and that our system is a bad one. That phrase "the development of the individual intelligence of the soldier" is beginning to figure in Official Circulars and once more to fill hearts with doubt and distrust. There undoubtedly is something wrong, but the talk we hear and the articles or letters which we read on the subject, while they show that both the Public and the Army are alive to it, are often too sweeping and generally extravagant.

The Commander-in-Chief in his speech at Meerut in December, referring to the reaction in progress in favour of individual fire at longer ranges than heretofore, remarked that the pendulum seemed about to swing, but he very aptly pointed out at the same time that collective fire may still have its uses and opportunities, and gave us to understand that in his opinion, at any rate, we cannot assume that fire control is out of date.

For so long have fire control and discipline been exclusively associated with "volley fire" that many people in the service habitually use the expression "volley fire" or "volleys," when they mean "controlled" or "collective fire," forgetting that volleys are only one of several descriptions of fire, as a reference to the Regulations will show. This slipshod confusion of terms is of greater importance than might perhaps be supposed. For though "volley fire" may be rendered impossible at a given range for various reasons, it does not follow that no other kind of controlled fire is possible at that range and under the same conditions,—still less that the principles of fire control need cease to bear effect. The idea too is prevalent that individual fire not only involves complete loss of control, but is a description of fire to which the principles of control cannot possibly be applied. That is how individual fire is generally regarded.

To this I cannot subscribe, for fire control and discipline are more necessary now than ever, and to neglect them would be to abandon

true principles. It would, moreover, be most misleading to accept the Boer war as a normal example of modern warfare, and to conclude that our experiences in rifle fire in South Africa were such as we should have met with in war with any other Power.

The difference between individual and collective fire is this, that in individual firing the individual soldier chooses his own objective, estimates the range himself, and aims and fires in his own time. In collective firing the choice of the objective and the estimation of the elevation required lie with the unit leader, while the men, when firing volleys, aim and press the trigger at his word of command, and when employing, what we English call "independent" fire, they aim and fire in their own time. The choice of the kind of fire to use also lies with the unit leader.

Even a skilled marksman firing with a first class rifle, at a known elevation, with picked ammunition, under favourable atmospheric conditions, on the rifle range, very rarely hits the same spot twice. The most he can hope to do with his skill, etc., is to make a close grouping of hits on the target. Eliminate any of these favourable conditions, and the pattern on his target will become less close. To make really good shooting even on the range therefore demands great skill, intelligence, and practice. In the field whether at practice or before the enemy, the average man naturally shoots much worse than on the range. He is unsteady from running and excitement; the range is unknown; he may even forget to adjust his backsight; and bullets are whistling round him. Add to this that rifles and ammunition, especially those issued in large numbers to an army, all have their individual imperfections, and it is obvious that average individual fire in the field can only be poor in its results.

Collective fire minimizes the causes of error and imperfections of individual, of rifle and of cartridge, and even turns them to account. Errors in elevation are minimized by the estimation of elevation required being left to a trained leader, while his men adjust their sights by his command and aim at the objective he points out. He observes the results and corrects the range accordingly. Thus by combining or collecting the fire of individuals and directing their bullets on the same objective, the chances of hitting that objective are largely increased, and the personal errors to a great extent compensated for.

The system of musketry instruction in our army up to 1886 or thereabouts was solely based on the training of the individual soldier. "Every man" ran the Musketry Regulations of 1877 and 1884 "who has no defect in his eyesight may be made a *good* shot." This is an absolutely false hypothesis. The average soldier can not be made a "good shot." He can only by careful training become a "fair average shot." After the Franco-German war of 1870 the idea that the accuracy of the fire of the individual soldier was the criterion of musketry efficiency was exploded for the rest of Europe. Every nation but our own recognized that the fire of the mass was the fire with which battles must be won, that the fire of the individual was mostly wasted, and that the increased efficiency of the breech-loading arm had, far from permitting of relaxed discipline and of less training—as some apparently expected—made an even more stringent discipline

and more careful training absolutely necessary. Average individual fire could never be "accurate" or give "good" results, and the only means to secure such was to concentrate and direct and control fire.

So the Germans in their usual thorough way took the question up at once and in a very few years they, and the other continental powers, had instituted well-thought out schemes for the control of fire and the maintenance of fire discipline. Individual fire was not abandoned. Both volley and independent fire were employed, each at its own particular opportunity: the extended firing line was organized into fire units; and the regulations gave instructions as to the use of large and small fire units, direction of fire, expenditure and supply of ammunition, and so forth. In our own service, beyond volley and independent fire being to a certain extent instituted, nothing was laid down and practically nothing was known of direction of fire, fire control, and fire discipline; and it was 15 years after 1870 before the British Army, in spite of bitter experience, began to understand that the fire of breech-loaders demanded control and discipline in order to be effective, and that our system of musketry training was a failure.

In the Ashanti war of 1874 the shooting of the men was so wild that it is said that at times the expenditure ran to 100 or 120 rounds a man at short range with scarcely any result. At Isandula the attack of the Zulus was met by an extended line firing individually and without control, with results with which we are all familiar. In Afghanistan at Ahmed Khel the fire was all uncontrolled independent at short range and yet some of the enemy reached the very bayonets. At Sherpur, it is said that when the independent fire on several occasions began, it never ceased until the last round in the pouches had been expended, and neither bugle nor voice could be heard for the din, whilst the results of such a fire were practically *nil*, though when the men were in hand and volleys were fired the fire was effective. At Maiwand uncontrolled independent failed to stop the enemy's rush. In the Transvaal in 1881 there was Majuba. In the Soudan in 1884 and 1885 our squares were more than once broken.

It is certain that many of these failures could have been avoided, had we known how to make a judicious use of and to control the fire. Compare with our failures in the Soudan in the eighties, the effect of controlled fire at Omdurman two years ago.

In 1885 Mayne's work on Infantry Fire Tactics was published. It is to a large extent a compilation of extracts from and adaptations of foreign publications, tables, and data of the preceding fifteen years, but it was a revelation to us and created quite a sensation in the British Army. Upon the deductions contained in this book a new system of musketry instruction for the army was based. The necessity for the institution of fire control and fire discipline was at last recognized.

Controlled fire can be executed either by volleys or by independent fire. The advantages and disadvantages of volleys and controlled independent fire respectively had been fully discussed and tested by experiment on the continent and were set forth in Mayne's book. More recent

trials have proved the correctness of the conclusions there arrived at. Speaking generally, these were, that while volleys are the easier to control, independent can be more quickly opened and the men are able to aim and fire in their own time, thus giving better results. With independent fire it is next to impossible to range, while with volleys it is comparatively easy to do so. Independent fire is the more difficult to direct, and with half disciplined troops is more likely, than volley fire is, to degenerate into uncontrolled wild firing. The grip of the leader is, as it were, looser. The old objection that independent fire raised an impenetrable cloud of smoke, no longer of course holds good. Independent fire on the whole requires a higher state of discipline than volley fire does.

Whatever considerations influenced the authorities, the new musketry system became almost exclusively a system of volley firing, executed by variously sized units from companies to sections, for all ranges except the shortest or "decisive" range, for which independent fire was reserved, though later, when the magazine rifle became more familiar to the troops, independent fire was recommended for "favourable targets." It was, however, seldom resorted to in practice.

The period of neglect of the teachings of 1870-71 in our service was followed by a boom in collective fire. The interest of all was roused into feverish efforts to inculcate "volleys" in both close and extended order. So intent did the army become on this latest idea, the development of fire control and fire discipline, that individual fire lost favour. Every soldier, it is true, still executed a course of individual fire annually on the range at a target, but skirmishing fire ceased to be practised in the field. The very word "skirmisher" dropped out of the books of regulations. "Volleys" degenerated into a perfect fad, and the "development of the individual intelligence of the soldier" was forgotten in the eagerness to develop the fire discipline of the unit and its leader. Principles were lost sight of, or stopped short at the section or sub-section, and when a squad could put 70 or 80 per cent. of hits on a 6 feet x 8 feet target at 800 yards in a crisp volley, we assumed that their musketry training was all that was to be desired.

Several campaigns were fought—on the frontier, in Burmah, Egypt and elsewhere, without, to the best of my recollection, any complaint against the system of training. The first clamour arose after or during the Tirah campaign. Trained as our soldiers were to fire volleys exclusively, they proved there the excellence of their fire discipline and the deficiency in the system of their education, by omitting to load and fire except by word of command in a country and against an enemy and on occasions, when the volley was precisely not the description of fire to employ. The same thing has apparently occurred again in South Africa, or at all events it has been impossible there to fire volleys as a rule.

It all amounts to this: we must adapt our fire to ground and enemy, and not confine our training to one description of fire, to the detriment of others, at least equally useful. However the case may be with continental nations, for us Britons both close order tactics,

and the extended line must remain equally familiar fighting formations. We have suffered reverses from savages from neglect to adopt the former and checks from Boers from inability to appreciate, amongst other things, the amount of extension required of the latter. No sort of tactics are for us a thing of the past. We may have at any time to face any kind of foe on any kind of ground—from savages armed with spears to the armies of Europe, from the plains of the Soudan and the thick bush of Burmah to the veldt and kopjes of South Africa and the enclosed fields of an European battle-ground, scored with roads and dotted with villages. As with our tactics, so with our system of fire.

As fire-arms have improved, the ranges at which fire is effective have increased, and the consequence has been that the *shock* tactics of closed bodies have, where both sides are equally well armed, been replaced by the *fire* tactics of the extended line. The "dissolving power" of the early breech-loader made the extended line formation necessary. The extended line required more individual action in the soldier. But individual fire had been proved wasteful and ineffective *per se*, so modern fire discipline was introduced to counteract its want of effect. The more accurate and far-ranging the arm, the greater is its "dissolving power," and the greater is the need for control and discipline—for control over companies, sections, and groups is lost earlier, and falls to *individuals* instead.

The following passage from the first page of Mayne might really have been written today, instead of 15 years ago, and shows that precisely the same problem had presented itself to tacticians 30 years ago as confronts us now in 1901. "This (the tactics of the extended line) naturally required more individual action on the part of the soldier; but as this apparently had a tendency to do away with the authority of the leaders, it raised at first a great cry against it, as being subversive of discipline and contrary to the principles of being able to keep men in hand. * * * Experience has, however, shown that this greater individual action for the soldier is a necessity, and hence the problem to be solved is, how the consequent unavoidable loosening of control may be best utilized and adapted to attain the end in view: a rigid training to true principles is now recognized as the only way of doing this, and by so habituating men in peace time to what they will have to do in war, cause it to become a second nature to them."

The secret of success in the fight is mutual action—mutual action of all arms, of corps and brigades, of every unit down, in fact, to every man, and the only possibility of securing such mutual action is to enforce it by training and control and discipline. That was the solution of the problem before and it holds good still. It must be borne in mind that we must not in our training stop short at volleys, or at controlled independent, but carry those *principles* on, until each individual man is as ready to instinctively load, choose his exact objective, estimate the elevation, set his sight, aim and fire by his own individual action and in consonance with the general plan, as he is to act by word of command: in a word, to exercise that fire control over himself that his unit leader wielded over him

and the other men of his section collectively a thousand years or so back. With regard to concentration of fire—a mark, a distinctive object cannot possibly be always pointed out for men widely extended to concentrate their fire upon, but every man must know what the leader's general objective is and “play up to it.” For that most urgently important point, the estimation of elevation, officers and non-commissioned officers must be ready to take the range with instruments, whenever possible, or must organize some method of ranging, and in any case must endeavour to observe the fire and help their men to the proper elevation.

At the time when Mayne wrote his book, it was generally accepted that within 800 yards of the enemy it would be difficult to control fire, that within 400 yards it would be impossible to do so, and that within that distance the fire owing to excitement, noise, and confusion generally would be wild and unaimed. Now-a-days those distances must at least be doubled, but we need not accept confusion, excitement, and wild unaimed fire, as the inevitable consequence of the loosening or loss of control over collective units. Loss of control should no longer be due to shattered nerves and want of discipline, but to the necessary wide intervals in the extended line, foreseen and prepared for. Though rifles and ranges have changed, flesh and blood remain as they were 15 or 30 years ago, and we can defer the moment of probable wild excitement to the “fixed sight” ranges.

In South Africa it was very soon made obvious that much wider extensions were necessary than those to which our men were accustomed, and that with men strung out to 10, 15 and 20 paces interval, taking what cover they could find, collective fire was out of the question, and individual fire had to be opened at ranges at which they had never practised in time of peace. Fire control was lost of course, for you cannot teach soldiers fire discipline on the glacis of an enemy's fortress. We should not have been, but were, in fact, taken by surprise, and are so much impressed by it that now a reaction is taking place against volleys in particular and collective fire in general against control of fire and in favour of skirmishing fire and “the development of the individual intelligence of the soldier.” The pendulum is about to swing. We are on the brink of rushing to extremes, as usual.

We have been taught a lesson. It matters not now whether we should have known something about it: all that matters is the application thereof. Because a handful of Boers succeeded in checking an army, it by no means follows that a handful of average European soldiers could do likewise. The Boer war has been full of abnormal circumstances and conditions. The Boers were mostly mounted; this gave them extraordinary mobility. They are not only fine riflemen, but have marvellously good eyesight, while the atmosphere of the veldt is extraordinarily clear. They were few in number, but made up for this by their mobility, by their accurate marksmanship, together with an unlimited supply of ammunition, and by a clever use of natural and artificial cover, while generally they fought on the defensive. On the other hand, our strategical and

tactical blunders were as extraordinary as our enemy was abnormal. Our infantry were "held up" at ranges hitherto deemed almost out of effective rifle fire; manœuvred in formations that presented a target to the enemy; and had neither the means nor the knowledge to entrench themselves, and no training in the long range individual fire to which they found themselves forced to have recourse, and which at such targets as the Boers presented was simply of no account at all.

But these are not normal conditions. They are the exceptional conditions that prove the rule. An European Commander, in the position of the Boer General, with an European force, would have made very different dispositions. He would have had the numbers the Boers lacked, and would not have contented himself with trusting to the containing power of the modern rifle to defeat his opponent, nor with meeting turning movements by a mere change of front. He would have had masses of troops to spare for counter-attack. Though his men's marksmanship would not have equalled that of the Boers, the volume and intensity of their concentrated and directed fire would have compensated for the want of individual skill. On the other hand, he would have over and over again offered a better target to his assailant. Whatever the results of that struggle would have been, the deductions as to infantry fire in the field would not have run to decrying fire control and discipline.

For the rest, the tactical deductions would have been what we have found them to be from bitter experience and might to a large extent have foreseen.

Deployments must take place earlier than heretofore, and extensions will often be at far wider intervals.

Battles will last days, instead of hours, and the attack on an entrenched position will resemble the attack of a fortress.

The fight has still to be decided by superiority of fire, and to gain this the widely extended line must endeavour to envelope the defender.

The position from which the decisive fire fight must be fought out which according to our Regulations should be at about 500 yards from the enemy, is more likely to be at 800 to 1,000 yards.

The spade will be almost as indispensable to the soldier as his rifle.

Artillery actions will be prolonged for hours, and whilst the opposing batteries are engaged with one another, the infantry will have to endeavour to press on. They cannot wait for the guns of the defence to be silenced.

If there is a dead-lock in the infantry fight, it can only be decided by the advent of more troops to establish superiority, or by a retirement.

The point at which fire on either side will be opened must depend on circumstances—ground and atmosphere, for example. Ground will often lend itself to the utilization of collective fire, which will still be maintained as long as possible. When, however, the intervals in

the extended line have so widened out that absolute control is no longer possible, each individual soldier must still act on the guiding principles of mutual action and concentration of fire.

Among other lessons which we may learn from the Boers was their appreciation of the value of mutual action between infantry and artillery and of concentration of fire from both small arms and big guns. Their hunting habits and instincts have engrained in them in a remarkable degree much of that fire control and discipline, which I call individual and which we must inculcate on our soldiers; and yet they exhibited the weak point in their discipline at decisive ranges, where, if they waited at all to fire, their fire was wild and shots flew high.

What we need now is to train the infantry soldier to rigid principles of fire control and discipline in both collective and individual fire, to practice him at about double the ranges at which he now shoots. He must be taught to act intelligently when left to himself to utilize or make himself cover, to train his eyesight by shooting as a skirmisher at 800 to 1,000 yards, and to judge distance with the help of plenty of field practices, to adjust his back-sight instinctively and to observe his fire. Judging distance practice should be re-introduced at once and given strict attention. Correct and exact sight adjustment should be stringently enforced on all occasions and constantly practised. Every officer and even every non-commissioned officer should carry a telescope or one of the new pattern binoculars. Every officer should have a handy range-finder, and every non-commissioned officer be well practised with the mekometer. Whilst more attention must be paid to the individual in all branches of training, drill, and musketry, collective fire should by no means be neglected, for not only may it at any time be of the highest importance in the field, but in musketry it is besides to cool self-controlled individual fire, what steady close order drill is to the extended line—both spell discipline.

I have endeavoured to sketch roughly our progress in fire control and discipline up to date. The progress has been slow, but it has, I think, been sure. It remains for us to get "forrarder" and that without delay, but not to let that pendulum swing, not to rush into extremes. Are we prepared to say that all our labour of the last 10 or 12 years inculcating fire discipline has been in vain, on the wrong lines altogether, and to give it up for the fire tactics of the Afghan war days,—fire which was as wild and as wasteful and as useless as fire can well be,—a period, when we had given up close order and not yet organized the extended line? Because our tactics were faulty and the volley system failed us in Tirah and in South Africa, it is proof that the training of both officers and men does not go far enough,—not that we are altogether on the wrong road, and is no reason that we should hark back and re-adopt the tactics of dark ages. Rather let us accept the progress we have undoubtedly made and press on, never assuming, as we seem to have rather done of late years, that we have reached finality, but keeping alive to the improvements of modern fire-arms, so that we may not be taken by surprise again, and be checked, and disheartened, and rush, as we are too wont to do, to the very opposite extreme.

CAVALRY OF BY-GONE DAYS : THE MAHRATTA HORSE.

BY LIEUTENANT F. P. P. ROUSE, 1ST LANCERS, HYDERABAD
CONTINGENT.

The rôle of cavalry has always been an interesting one, and looking back into the records of the past has still a fascination for us in these days when weight has had to give way to lightness and shock to mobility.

Not one of the least interesting of the cavalries of by-gone days is that of the Mahrattas.

The history of the Mahrattas teems with stirring events and incidents, full as it is of plots and counter-plots, usurpations and intrigues, and the rise of one and the downfall of another.

The Mahratta power had its birth in the 16th century. In the year 1535 Ibrahim Adil Shah, upon his accession to the throne of Beejapore, shewed a great preference for the natives of Maharashtra both as men of business and as soldiers, and established the Mahratta language for keeping accounts in preference to Persian.

"He entertained 30,000 Deccan Cavalry and introduced the practice of enlisting Bargeers—men who are supplied by the State or by individuals—instead of Sillahdars who provide a horse at their own expense. The Sillahdar was much more respectable than a Bargeer, and was in fact considered in the Mahratta country a sort of gentleman cavalier."*

In the Indian Cavalry of to-day this Bargeer system has practically died out, with the exception of the three Madras Lancer regiments,—all the men of which are Bargeers, the regiments being maintained entirely by Government, and some 26 Bargeers per regiment of Sillahdar Cavalry maintained by the native officers. Until comparatively lately, however,—some 10 or 15 years ago,—the number of Bargeers in the Sillahdar regiments was very much larger, for in those days it was no uncommon thing for a native officer to own an entire troop or more of horses.

The men were more or less his vassals and he the feudal lord who swore fealty to the Sircar like the English barons of mediæval history.

This system was to a certain extent abused and is no longer permissible, though amongst the pensioners who monthly claim their reward of long service from the Government may be found many a one who looks back "through the mist of former years" to the days when he rode in pomp at the head of his troop.

* "History of the Mahrattas."

"Tempora mutantur et nos mutamur in illis."

The Mahratta dynasty had its birth in the 16th century, but it did not, however, assume any great importance till some hundred years later when a leader arose in the person of Sivajee, who was born in the year 1628.

He was of an adventurous disposition and his first designs were formed with a view merely to personal advantage. He was successful in his ventures, and by the year 1668 when he was 40 years of age he had risen to power, and he now spent two years in revising and improving his civil and military arrangements.

The foundation of his power was his infantry; his cavalry had not yet spread far and wide the terror of the Mahratta name, as it was destined to do in the course of the next 10 years.

What were the actual boundaries of Maharashtra at this date is not quite clear, but it is certain that it extended at least from the Nerbuddah River to the Kistna. The general aspect is hilly, the valleys are well watered and the climate is perhaps the most salubrious in India. The banks of the Godavery* or Gunga, one of the principal rivers, are noted for their breed of horses. The neighbouring district of Berar is also famous for the hardiness, but not for the beauty of its horses.

Malagaon near Nandeed is still noted for its annual horse fair held in December, where all the horses of the neighbourhood for over 100 miles round are brought and sold. The fair dates back some 150 years, but owing to the famine it has not taken place for the last three years.†

* "Sivajee's Cavalry was of two kinds—Bargeers and Sillahdars—as was that of Ibrahim Adil Shah already mentioned; only Sivajee's Cavalry were generally mounted on horses, the property of the State. A body of this description was always called Pagah or household troops, and Sivajee always placed more dependence on them than on the Sillahdars or any horse furnished by individuals on contract.

With the one and the other of the latter description he had a proportion of his Pagah intermixed to overawe the disobedient and to perfect his system of intelligence which abroad and at home penetrated into a knowledge of the most private circumstances, prevented embezzlement and frustrated treachery."‡

"The Mahratta horsemen were commonly dressed in a pair of tight breeches covering the knee, a turban which many of them fastened by passing a fold of it under the chin, a frock of quilted cotton, and a cloth round the waist with which they generally girded on their swords in preference to securing them with their belts.

They wore many ornaments in the way of gold and silver rings and thick necklaces, sometimes very curiously wrought.

* Along the Godavery the Hyderabad-Godavery railway has nearly been completed—I write in October.

† Malagaon is a place of pilgrimage for Hindoos. I was there in December 1898 and with a friend shot nine couple of duck and teal on the village tank.

‡ "History of the Mahrattas."

The horseman was armed with a sword and shield; a proportion in each body carried matchlocks, but the great national weapon was the spear, in the use of which and the management of their horses they evinced both grace and dexterity.

The spearman had generally a sword and sometimes a shield, but the latter was unwieldy and was only carried in case the spear should be broken.

With respect to the horses' appointments, the bridle consisted of a single head-stall of cotton rope, or leader, with a small but very severe flexible bit. There was a second head-stall over that of the bridle, to which was fixed a thong or cotton band, tightly fastened to the girths, and this formed a strong standing martingale. The Mahratta saddle was composed of two pieces or sides, of very thick felt, strongly sewed and tied together with thongs or cotton rope, leaving a small space between the rides, so as to prevent pressure on the horse's backbone: attached to this was a crupper, made of cotton rope, frequently covered with a piece of coloured silk or broad cloth.

When the saddle was put on, the horseman placed over it his blanket, sometimes a carpet and any spare clothes he might have. Two cotton bags, or pouches, tied together by a string and thrown over the front part of the saddle, carried either provision or plunder; when all these were adjusted, the horseman proceeded to mount; and the last thing was to seize his spear which was stuck by the horse's head in the ground.

On the left side and hind part of the saddle was suspended the tobra or feeding bag, in which the pegs for picketing the horse and his head and heel ropes were carried."*

Over every 25 horsemen Sivajee had a havildar. To 125 there was a joomladar; and to every 5 joomlahs or 625, he had a soobehdar. To the command of every ten soobehs, or 6,250 horse, which, however, were only rated at 5,000, there was a commander styled panch-hazaree.

There was no officer superior to the commander of 5,000 except the surnobat or chief commander. There was one surnobat for the cavalry and one for the infantry.†

The regular pay of the Bargeers was from 2 to 5 pagodas‡ and that of the Sillahdars from 6 to 12 pagodas monthly. The pay of the higher ranks was as follows:—Joomladar 20 pagodas, soobehdar 50 and a palanquin, panch-hazaree 200, besides an allowance for a palanquin and 'aftabgeer.'

Every man received his fixed share of plunder, and "to plunder the enemy" is to this day used by the Mahrattas to express a victory, of which they consider this to be the only real proof.

* "History of the Mahrattas."

† The Mahrattas never made good infantry.

‡ A 'Pagoda' was valued at from 3 to 4 rupees.

The horses, especially at an advanced period of Sivajee's history, were subsisted during the fair season in the enemy's country ; during the rains they were generally allowed to rest, and were cantoned in different situations near pasture lands under the protection of some fort where the grass of the preceding season was stacked and grain prepared by the time they returned.

In the year 1670 Sivajee having now completed his military arrangements proceeded to break once more the tranquillity of the Deccan, and entered upon many daring and adventurous enterprises.

He stormed the lofty fort of Singurh and with 15,000 men appeared before the gates of Surat which place he successfully plundered. He now returned towards his own territory, but near Chandore he was closely pressed by 5,000 cavalry under Daood Khan. He was greatly hampered by his booty which at all costs he was determined to save, but skilfully manœuvring he wheeled about, attacked Daood Khan, drove him back, and seizing the right moment to charge completely routed him.

"Two years later the important fort of Salheir which was held by Sivajee's troops was attacked by the Mogul leader, Mahabut Khan, who had raised 40,000 men, half of whom he now used against Sivajee.

Sivajee was determined to save the fort and he therefore despatched 20,000 horse under Moro Punt and Pertab Rao Goozur to give battle to Mohabut Khan. As soon as the Mogul General heard of their approach, he sent the greater part of his force to oppose them under an officer called Iklas Khan. Pertab Rao who commanded the advance of the Mahrattas, seeing Iklas Khan eager to attack him, waited his approach, drew him into a charge, fled before him until the Mogul troops were broken, when turning round supported by Moro Punt he gave them a signal defeat.

The Mogul's troops recovered their order and rallied to the last, but they were charged broken, and routed with prodigious slaughter : twenty-two officers of note were killed and several of the principal officers wounded and made prisoners.

The victory was the most complete ever achieved by Sivajee's troops in a fair fought action with the Moguls."*

It would occupy too much space to recount fully all the successes of the Mahratta horse under Sivajee.

They were successful all over the Deccan and the terror of their name was universal.

In the year 1674 Sivajee was enthroned and made a treaty with the English.

He committed dreadful devastation in the Mogul provinces and in the year 1697 took no less than 27 forts,* but his victorious career was now very soon to be closed, for early the following year he died. He was a man of consummate skill and a born leader of men.

He possessed to an immense degree the power of inspiring enthusiasm and combined the dash of a partizan adventurer with the order and economy of a statesman.

It has not been my intention in a short article such as this to trace minutely the fortunes of the Mahratta Horse extending as they do over a period of some 150 years, but rather to give some idea of their organization and perhaps to show what they were capable of doing under skilful leadership of which we need no better example than the defeat of the Mogul army under Mahabat Khan which in a few words I have described above.

They found other leaders after the death of Sivajee, and under the Peshwas, Holkar, Scindia and the Gaekwar for a time they reigned supreme.

But dynasties like individuals "have their day and cease to be" and containing within itself the germs of disintegration the Mahratta power was destined to bend before the superior sway of European adventurers.

At the battles of Assaye and Argaum 1803 where the Mahrattas succumbed to the troops under Wellesley and at Laswaree where General Lake gained a brilliant victory the Mahratta power was "sketched not killed." It was not until the year 1818 that it received its death-blow at the battle of Mahidpore.

The Mahrattas were nothing but an army of freebooters on a very large scale and their filibustering expeditions from which the only advantage they hoped to reap was unlimited plunder and booty corresponded exactly with the smaller ravages of the dacoits in the Deccan at the present time.†

* In almost every Deccan town or large village may still be seen the remains of the old forts. Two years ago during its annual long reconnaissance my regiment encamped under the walls of the fort of Dharoor. Looking over the massive walls and ramparts which still shew where they were battered by artillery and where now countless pigeons have their abode was fascinating and as one looked at them by moonlight, towering over the new peaceful plains below, one recalled these lines of Byron :—

"And there they stand, as stands a lofty mind,
Worn but unstooping to the baser crowd,
All tenantless, save to the crannying wind,
Or holding dark communion with the cloud.
There was a day when they were young and proud,
Banners on high, and battles passed below;
But they who fought are in a bloody shroud,
And those which waved are shroudless dust ere now,
And the bleak battlements shall bear no future blow."

This fort was stormed in 1630.

The native town adjoining the cantonment from which I write still retains its ancient fort.

† A squadron of my regiment was despatched against a large body of dacoits near Bheer in April 1899, and successfully broke them up, killing several and taking the leaders and the majority of the band prisoners. To the subaltern in charge of a troop who called on them from a hill to surrender, the leader returned the somewhat rude reply :— "Stop crowing like a cock" !

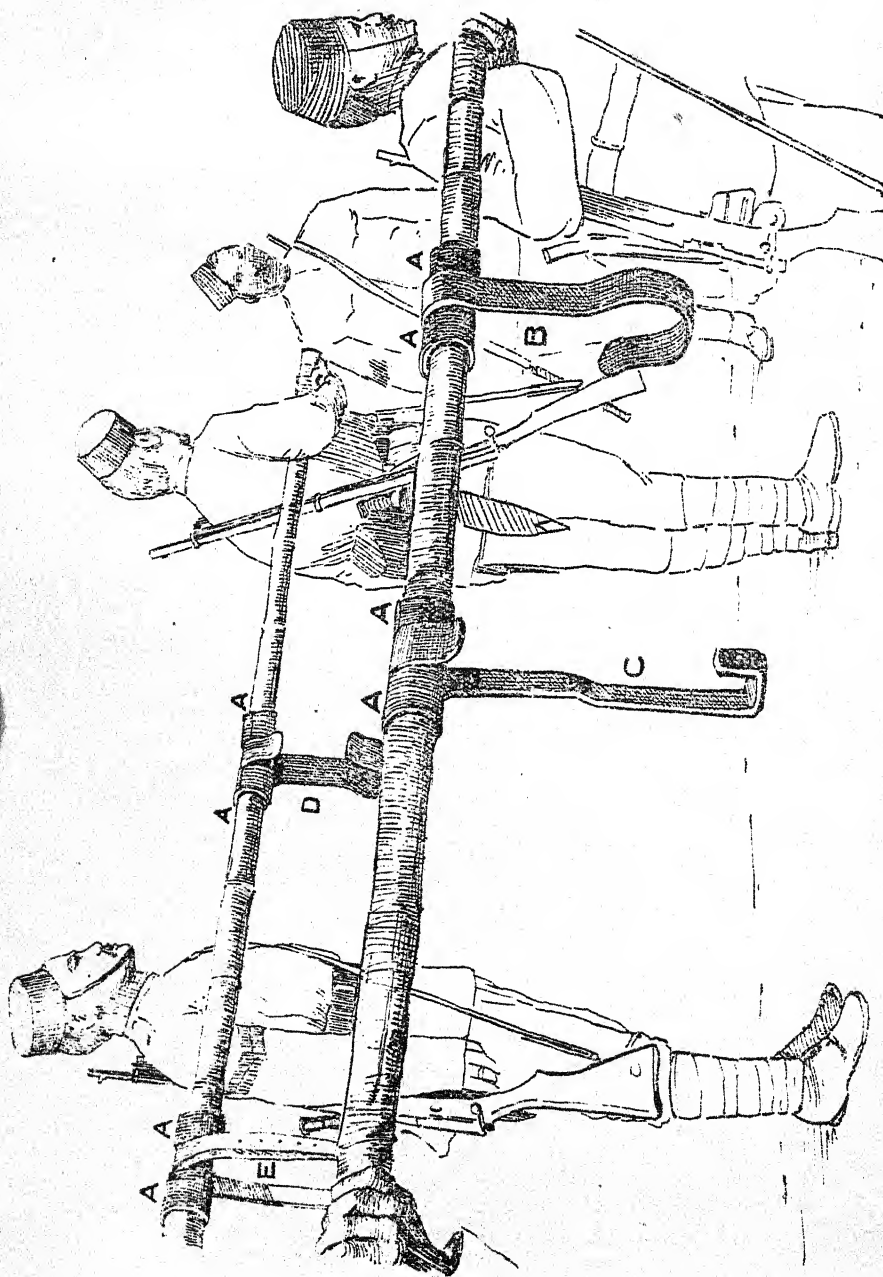
The secret of their success lay in their skilful leadership and their mobility. They subsisted on the country and towns they ravaged, and if they were impeded at all, it was not by heavy transport but by loot.

They operated in much the same fashion as the Boers have done in this last war. 'They came like fire and like wind they went.' They acted on the spur of the moment and in accordance with the impulse of their leader.

They fought with the certainty of success, for until the English appeared on the scene, they knew no other army in India could resist them.

The Mahratta Horse is now a thing of the past, but their memory is still fresh in the minds of the inhabitants of the Deccan. As a class they have a fair knowledge of horses probably inherited from their forefathers and they make very excellent salutries or farriers, in which capacity many of them are employed in Native Cavalry regiments.

In the Madras and Bombay Cavalry regiments we have now some three squadrons of Mahrattas who loyally serve the British Raj in the land where a century ago they reigned supreme and where the deeds of their forefathers spread terror far and wide from Hyderabad to Delhi.



MAXIM GUN TRANSPORT USED BY THE 1ST BATTALION, 4TH GURKHA RIFLES, SUITABLE FOR COUNTRY OR GROUND IMPRACTICABLE FOR MULES OR WHEELED CARRIAGE.

BY LIEUTENANT-COLONEL F. M. RUNDALL, D.S.O., COMMANDING
1ST BATTALION, 4TH GURKHA RIFLES.

When we embarked for China at Bombay, we were given a field carriage for our maxim gun; but on our arrival in the country I saw at once it was quite unsuitable for use in a land intersected, as this is, with endless creeks and ditches, bridged only at wide intervals by narrow planks, fallen trees, or stone bridges two or three feet wide and with no parapets. To construct bridges or carry portable ones is out of the question; the labour of transporting the latter would be considerable, as such portable bridges would have to be of sufficient dimensions and strength to span creeks from 20 feet upwards; while to construct a bridge at every ditch (they occur every three or four hundred yards), possibly under fire and in an open country, is also out of the question.

The depth of water in the creeks and ditches in the neighbourhood of Shanghai is anything from a foot to twenty feet according to the state of the tide in the Whangpoo river. Small native boats could accompany a force up the creeks, but they are not large enough to ferry mules or a field carriage across these water-ways.

No tripod mounting had then been served out to us for our maxim, so, on arrival at Hong Kong, I asked Major General Gascoigne, Commanding the troops there, if he could lend me one out of his stores, which he most kindly did. It was only when we disembarked at Shanghai that I saw that neither a field carriage nor a tripod mounting carried by a mule would be of any use. As a matter of fact we had no mules, and we should all have had to put our maxims on Chinese wheel barrows had we been required to take the field. But a wheel barrow cannot pass over a ditch except by a plank or stone bridge, nor could it move over a field flooded by rain or for irrigation purposes; this would mean great delay in finding a bridge or in moving round these enormous fields on the paths which skirt and bound them. I felt therefore that something must be done, and done quickly, to enable me to carry my maxim wherever it might be wanted. Captain D. C. Young of my battalion devised a means to which I added one or two slight improvements, and which we have tried practically and have found eminently successful. Briefly it consists of two bamboo poles and some hooks in which to sling the gun and its tripod mounting, which are then carried easily by the men of the gun detachment.

A glance at the photographs taken by Captain Grant of my regiment will give a good idea of the contrivance the details of which are as follows:—

Poles.—Bamboos 9 feet long, and not less than $2\frac{1}{2}$ inches in diameter at the thickest end. They are fitted with leather bands (marked A on plate 1,) $2\frac{1}{2}$ inches broad, which form beds for the hooks so as to prevent them slipping when the men are moving up or down steep slopes. These bands are secured to the poles with screws. The men are provided with small cushions to place on their shoulders to prevent the poles galling them.

Hooks.—These are made of spring steel covered with leather to protect the barrel and breech casing from being dented or scratched by the hooks. Hook (marked B on plate 1) supporting barrel casing is 2 inches broad over the pole, and $2\frac{1}{4}$ inches broad under the barrel casing.

Hook, marked C, supporting the breech, is $2\frac{1}{2}$ inches over the pole, and tapers to $1\frac{1}{4}$ inches where it passes behind the fuze spring box and under the breech casing.

Hook, marked D, supporting shaft of tripod mounting, is 3 inches broad, and is fitted to shaft with ammunition box tray. We have found, by actual trial on the rifle range here, that the gun can be fired just as conveniently and rapidly if the ammunition box is placed on the ground. If the tray for the box is fitted to the shaft a larger hook would be required than that shown in the photograph, but it would be in the same position. The legs of the tripod mounting are supported by an ordinary leather strap with buckle, marked E, as the loop makes it easier to sling and unsling the legs. Steel is better able to stand the strain than iron. Moreover, the grip of the spring steel on the poles and barrel casing gives an advantage over iron as it tends to reduce to a minimum the lateral swing of the gun on the march. The three steel hooks cost eighteen Mexican dollars, that is, Rs. 27 or £1-16.

Time taken to come into action.—Under ordinary circumstances the gun comes into action in 45 seconds easily; and 30 seconds suffice to "take order of march" after unloading.

Ammunition boxes.—These are distributed amongst the men of the gun detachment, and are carried by hand.

Reserve ammunition.—This would be best carried by coolies when required to accompany the gun.

Distribution of men.—In "order of march" Nos. 3 and 4 of the detachment carry the gun on its pole, and Nos. 1 and 2 march alongside of them (see plate 2), Nos. 5 and 6 carry the tripod mounting on its pole with Nos. 7 and 8 alongside. Two additional men, Nos. 9 and 10, accompany the above detachment to replace casualties, bring up ammunition, help to refill belts or carry ammunition boxes. They also act as another relief for carrying the guns or tripod mounting on the march. When necessary they can be sent on ahead to act as scouts, to choose a way over difficult ground, or to look out for the enemy, though of course the regiment has its own scouts out for the latter purpose when advancing across country.

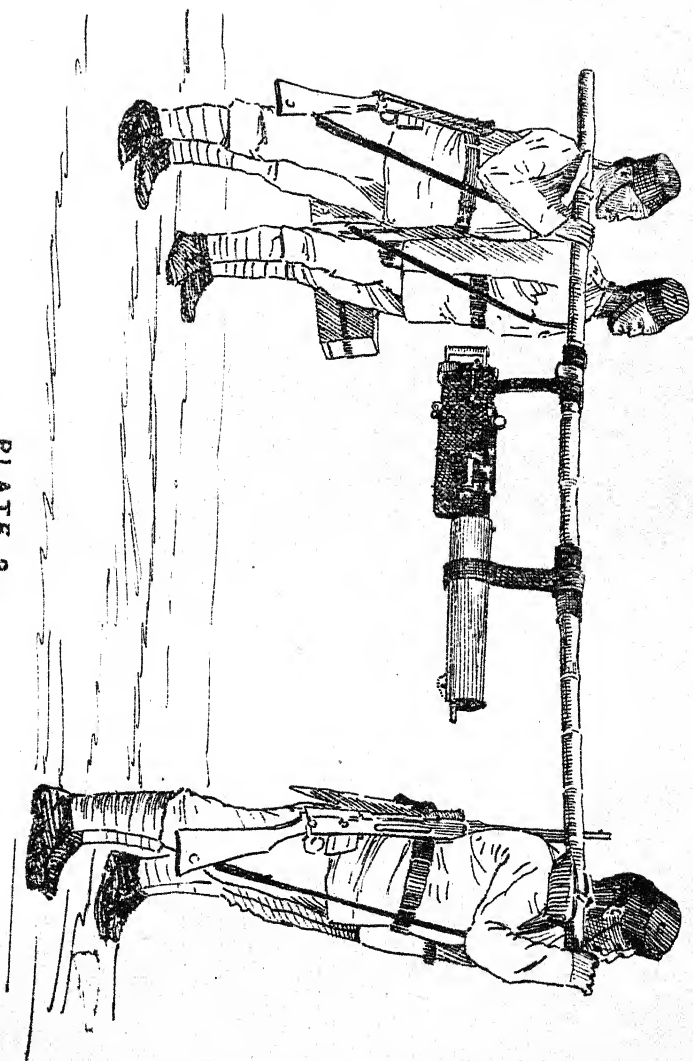


PLATE 2.



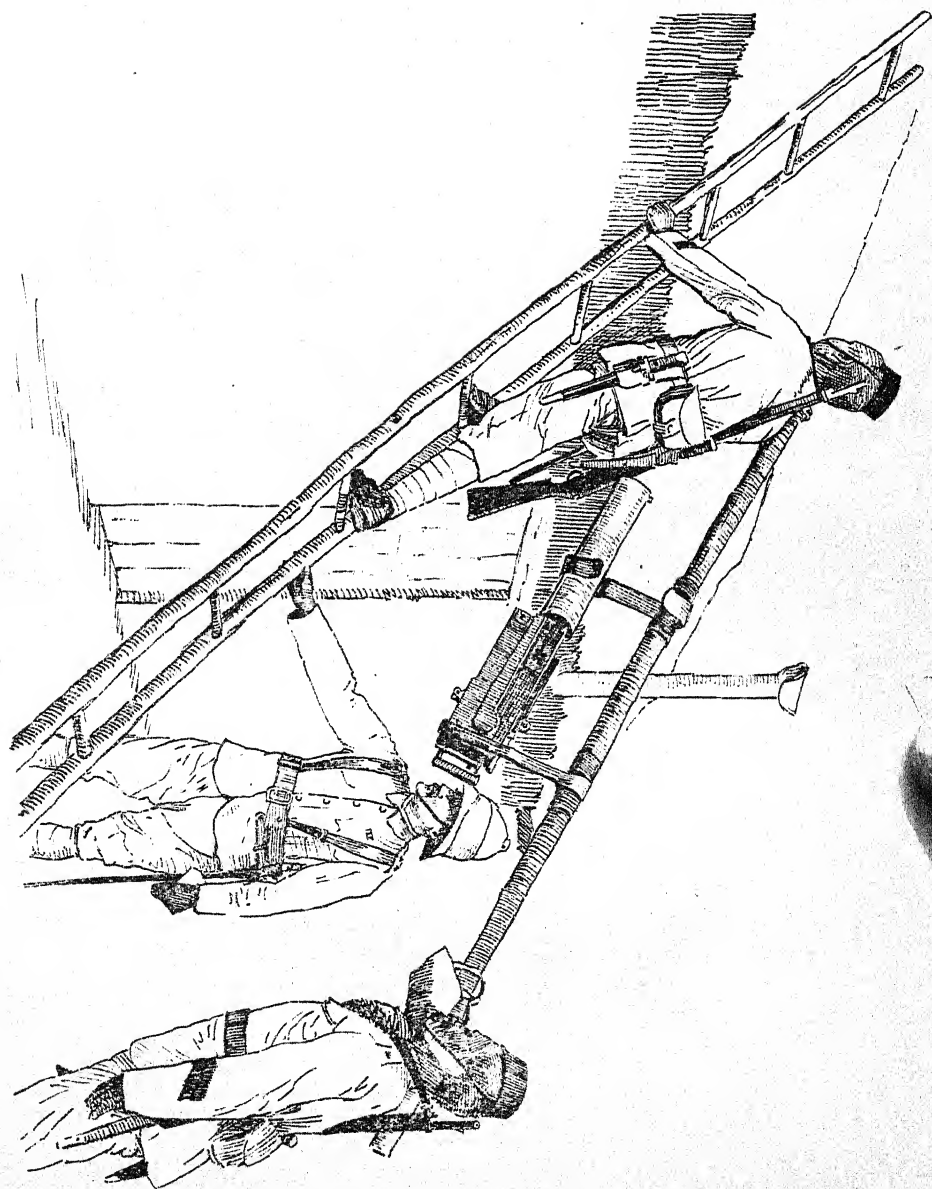


PLATE 4.



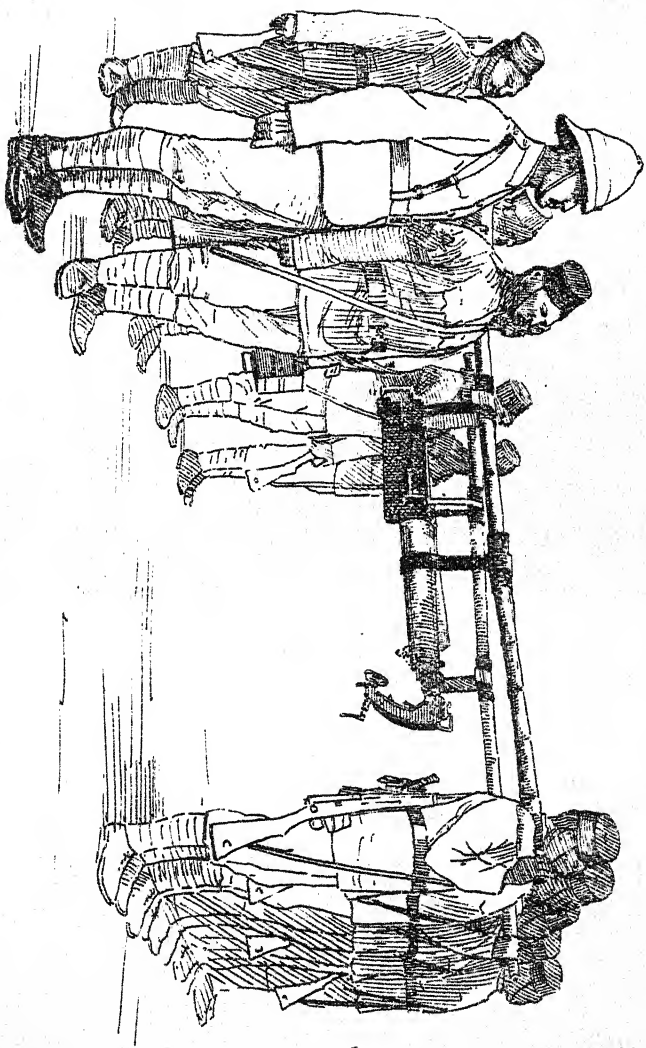


PLATE 6.



Order of march.—On a road the detachment marches four abreast,* on an ordinary path two abreast; in narrow places the tripod lands, with Nos. 7 and 8 following it; behind them comes the gun with Nos. 1 and 2 following. To prevent the gun and tripod from swinging from side to side even numbers do not keep step with odd numbers, but step off with the right foot first.

Reliefs.—Reliefs are effected without halting on the command "*Change Rounds.*"

Coming into action.—On the command "*Action from etc.*", Nos. 5 and 6 advance with the tripod, Nos. 7 and 8 unsling it and place it in the required position, while Nos. 5 and 6 take the pole to the rear and join the rest of the detachment. Nos. 3 and 4 then bring up the gun and hold it over the mounting (see plate 3), while Nos. 1 and 2 insert the cross head and elevating joint pins. As soon as the gun is fixed on the mounting Nos. 3 and 4 take the pole to the rear and join the rest of the detachment.

Taking order of march.—After unloading, to "take order of march", the above procedure is reversed.

Advantages.—(i) The gun can be carried wherever a man on foot can go, up hill, down hill, across ditches, and creeks, planks, narrow bridges, etc. There are no hills in Shanghai to serve as an illustration by photograph of the gun going up a steep slope, so I had to make shift with a ladder placed against an officer's hut,—see plate 4. This photograph also shows how, for the purposes of street fighting, the gun could be conveyed on to a flat roofed house, verandah, or other coign of vantage wholly inaccessible to a mule or wheelbarrow.

(ii) The men of the detachment carry their own gun, so they are absolutely independent of mules or other transport.

(iii) The gun and tripod are conveyed with ease and rapidity. I have found the men have no difficulty whatever in keeping up with the battalion on a 15 or 16 mile route march, either on good roads or across country.

(iv) No mule to be looked after in action or to be replaced if shot; or to be fed and groomed; or to serve as a mark whereby an enemy can locate a maxim. A maxim can often be absolutely screened from view where there is no cover for a mule.

(v) No saddlery to clean and repair.

(vi) When making a night march across country, the trouble so often caused by mules falling, jibbing, or braying when silence is desirable, is avoided.

(vii) The gun can be taken across rivers in boats which would be too small for mules.

(viii) Nothing to get out of order.

(ix) Mounting and dismounting the gun are easy and speedy.

(x) Cheapness, and no recurring expenditure necessary.

It will be seen at once how useful this contrivance would be in mountain warfare when maxims are required to be transported up or down steep khuds.

* See plate 5.

THE BOERS' MEDICAL ARRANGEMENTS DURING THE
WAR.

TRANSLATED FROM THE RUSSIAN BY CAPTAIN H. H. DOWDING,
ESSEX REGIMENT.

Two Russian doctors who served in the Transvaal, with the Russian Red Cross Hospital party, have recently described their experiences and impressions of that country.

The *Novoe Vremya** in publishing a report of the first lecture calls it an "interesting account of the condition of things" out there. Such a sketch, or glimpse, of the Transvaal from a medical point of view, may perhaps be of at least equal interest to English readers.

I

The Russian Red Cross party left Petersburg on the 11th December 1899 and arrived in the Transvaal about six weeks later. They were received, Dr. Chistovitch said, with enthusiasm, and the members of the party were welcome guests. Intense earnestness for the defence of their country was to be seen everywhere. The Boers went to war calmly and in fact willingly. There were very many who were dressed in mourning, but that did not shake their determination.

The Red Cross party had a great reception in Pretoria, but for all that they had to wait about, for the first fortnight, without anything to do. The authorities themselves did not know where to send them. The other foreign hospital parties had just the same experience in this respect. The Red Cross badge was to be seen everywhere, in great numbers. It appeared afterwards that both Cronje and Joubert wished to have the services of the Russian party at the same time, which put the central medical authorities in a position of some difficulty.

However, everything turned out well in the end, and the Russian Red Cross party was of great service, both in the theatre of operations and to the Boer farmers; they earned the greatest gratitude of the people.

The Boers had foreseen the war and had prepared for it long before the commencement of operations. Everything was 'cut and dried'—except the organization of a regular medical service. This latter point appeared from the establishment of doctors available, and also from the composition of the central medical government committee, which consisted of four officials, of whom *not one* was a medical man!

The doctors in the Transvaal and in Pretoria are far from being up to the mark in the matter of medical education. Some of them

—Africanders—are in Government employment. The general practitioners are mostly foreigners, who have made profit their object in life. The people trust them but little, and dislike being treated by them. To become a doctor, in the Transvaal, no examinations, no diplomas, no certificates of scholarship or skill are required. The only thing necessary is the word of honor of the candidate that he is a doctor, with the testimonials, of two witnesses. No Medical educational institution exists. Medical attendance is expensive—a doctor receives not less than £10 for a visit, and, in addition, supplies medicine from his own dispensary at five shillings for each prescription. Doctors out there are quite willing to supply medicine by letter, without examination of the patient.

It was medical men such as these, in whose accomplishments the people themselves had little faith, that the Government had to utilize for the composition of their field medical establishments. It was not to be wondered at then, that the Boers, at first, had but little faith in the disinterestedness of the doctors of the Russian Red Cross party.

The Boers had no nursing sisters. The field hospital establishments consisted of the local doctors, who collected their own orderlies and assistants from among clerks and such like, without any medical training. Consequently, in positions occupied for any length of time, the laagers soon became insanitary.

The roads over which sick and wounded had to be carried were worse than our Russian country roads; only Boers, hardy from their birth, could have endured the torture of being transported over them. Wagons and carts, used in ordinary times for goods, did duty as ambulances.

The train-service was well organized, but in a strange way: the majority of the carriages were told off for the accommodation of the medical *personnel*, and only a very small number for the sick and wounded.

The lecturer then described how and where the Red Cross party was employed, the model hospitals, and field detachments, etc.* He then passed to a description of the central medical authorities, of the Transvaal.

It was not till later on, he said, that medical men had any share in the administration, and at first, by the force of circumstances, the distribution of field medical establishments was in the hands of the generals themselves. Thus, in some places there were many such establishments and in others none at all.

When Pretoria was taken, the local hospitals in despair came to the conclusion that all was lost and went over to the British. Here also our Russian party did good service. But at the very height of their activity, when their services were most urgently needed, they suddenly got orders to return to Russia.

There was no dearth of medical appliances, supplies, medicines or instruments. The Transvaal Government had foreseen everything with remarkable perspicacity. Unfortunately, the local medical men did not know how to make use of them, as they should.

* These details, which would, perhaps, have been interesting to military readers are omitted in the original report.

II

At a meeting held in Petersburg on the 29th January last Dr. N. I. Kuskov, who was the representative of the Russian Red Cross Society, and in charge of the hospital sent out, by that Society, to the Transvaal, related some of his experiences in that country.

Our hospital party, he said, was composed of: 6 doctors, 2 officials (store-keepers, etc.), 4 apothecaries, 9 nursing sisters, and 12 orderlies—a total of 33 persons. A sum of £10,000 was allotted for six months' service, and about £11,200 was actually disbursed during a period of ten months. While we were with the Boers, the Transvaal Government provided us, almost the whole time, with bread and meat, of which—reckoning at the prices prevailing there—we received altogether some £3,500 worth. The necessary number of oxen, mules, and horses were also placed at our disposal for transport, and Kaffirs for menial service. Occasionally the expenses incurred in feeding the hospital staff and the sick were extraordinarily high; for example, we had to pay nearly £2 for a small sack of potatoes, and so on in proportion!

On our arrival we had to remain, in absolute idleness, for a long time, because the Medical Council, under whose orders we found ourselves, could not make up their minds as to where we were to establish our hospital. It was not till the early part of February that we made our own choice, and established ourselves at two points—Volksrust and Newcastle—close to the theatre of operations, where we opened a hospital of 50 beds and a small detachment hospital.*

But even here we had nothing to do for a long while; there were practically no wounded, and but few sick. The hospital staff, therefore, had a tedious time of it. Later on things gradually changed, and now and then our field detachments found plenty of hard work in caring for the wounded and in treating the sick.†

During our stay in the Transvaal we had several times to change the scene of our operations, and follow the Boers; and occasionally we had to put up with hardships and privations.

At first the Boers thought that, immediately after the arrival of our Red Cross party, Russia was going to take their part generally. The rumours as to such support, on the part of Russia, were very various: it was said that Russia had proposed mediation to England in order to bring the war to a close; then that an ultimatum had been presented; and finally, that 10,000 cossacks would shortly arrive in the Transvaal to help the Boers!

But time went on and no such help appeared, and relations between the Boers and our hospital party gradually changed and became colder and more indifferent.

* There was also a small Russian Red Cross party at Glencoe. These three parties followed the Boers in their retreat and finally established themselves, in May, near Watervalboven where they remained till the end of August.

H. H. D.

† The total number of patients treated in the Russian hospitals was 1,090 men, of whom only 123 were wounded.

H. H. D.

The relations between the Boers and Kaffirs leave much to be desired. The Kaffirs have practically no civil rights, and are subjected to corporal punishment. A Kaffir is not allowed to sit down in the presence of a Boer; it would be considered the very greatest impertinence to do so. And it is the same in everything. For instance: it was not to be thought of that a Kaffir should be put in the same room, or tent, as a sick Boer; it would have raised a mutiny!

During the war in the Transvaal Kaffirs were compelled to serve the Boers without payment, doing all the dirty work for them; whereas the English, from all accounts, paid ready money for such service.

As to the foreign volunteers fighting among the Boers, the latter treated them most contemptuously and often in an unfriendly way. There were many reasons for this, and in many cases the foreigners themselves were to blame. Out of 6,000 men who arrived in the Transvaal and fought for the Boers only a small proportion were of respectable class; the bulk of them were mere adventurers. They were incomparably less enduring than the Boers; they were bad shots, and had not that special tenacity of purpose which is a marked characteristic of the Boers themselves. The majority of them preferred to live in the towns, and spent but little time in camp.*

On one occasion the Boers very nearly succeeded in capturing Lord Roberts, who had pushed on with a small staff a long way from his own position; but the attempt failed solely because of the foreigners. The Boers, seeing the risky position Lord Roberts was in, were quietly proceeding to cut him off by a turning movement, when the foreigners, without any deliberation but with yells of delight, dashed straight for him; and Roberts, with all his staff, was able to gallop off in the nick of time.

(*Novoe Vremya*, 1st February 1901.)

* A certain Mr. Greenhoff recently returned to Saratov from the Transvaal and was interviewed by a reporter of a Saratov newspaper. In reply to a question as to how the Russian Volunteers in the Transvaal had behaved, he smiled and said: "Oh! so so—very so so! on their arrival they were provided, by the Boers, with horses and arms. Next day they sold the horses and spent the money in drink. It would probably have been the same with the arms, except that they did not take those with them to the pot-houses. Being thus without horses, they proceeded to provide themselves with others by cutting the traces of hackney carriage horses and appropriating them. The drivers would be given a receipt and told to get their money from the Boers. Speaking generally, there was absolutely no order or discipline among our (Russian) Volunteers. This is explained by the fact that there was no severe system of command such as a Russian is accustomed to; the Boers understand discipline differently..... and do not need the *knout—verbum sap!*"

"But did they take part in the military operations?"

"Yes, in some of the fights. But in the end the Boers ceased to make much use of them, and the Officer Commanding (Captain Gauetski) ran away (!?) from his Volunteers to Moscow."

The above appeared in the *Novoe Vremya* of the 6th March last, with a note to the effect that Russians who have been in the Transvaal will, no doubt, not be slow to express their views as to this "unseemly gossip the author of which must surely be a Jew."

However this may be, and even allowing for a certain amount of exaggeration, Mr. Greenhoff's views as to the quality of the Volunteers are not entirely without interest, as being those of a man who had been on the spot and who was considered worth interviewing on his return to Russia.

H. H. D.

FRANCO-RUSSIAN RELATIONS.

BY CAPTAIN H. H. DOWDING, THE ESSEX REGIMENT.

Certain rather scathing criticisms on the French Minister of War and on the French Army, recently appeared in the *Novoe Vremya*, which attracted considerable attention in our own and the Italian, as well as in the French, Press. It is said that the remarks in question reflect with some exactitude a feeling which prevails in Petersburg, especially in military circles. It may therefore be of interest to some of the readers of the "*Journal*" to see what this feeling—as expressed by the *Novoe Vremya*—really is.

The criticisms are two-fold. First, the Paris correspondent reported certain recent developments in France, and pointed out what he deemed to be the probable results and attendant dangers. The *Novoe Vremya* then commented on this letter, in a leading article which appeared a few days later, pointing out with considerable clearness, certain practical difficulties in the way of what was said to be the "fundamental idea" of army reform in France,—i.e., a reduction of the period of colour-service.

It may, perhaps, be noted here, that the *Novoe Vremya*, in reply to certain comments which appeared in the French Press has since informed its readers that the Paris correspondent is a retired officer of the Russian General staff whose name (Mr. P. Vojin) is well known both in the journalistic world, and at the Russian Embassy, in Paris.

The correspondent's letter is a long one, extending to between three and four columns of close print, and need not be reproduced here. It refers, however, to some matters of interest, and a few extracts from it may not be out of place, to show its general tone, and also to explain the reference made to it in the leading article.

The writer begins by saying :

"A series of reforms, subversive of the foundation laid down by the originators of the army of the Third Republic, and rumours of others still more 'radical,' have at last excited general attention. It is felt that a crisis is approaching in the French army, in its character, spirit and organization. This crisis is not only a vital question for France herself, but is a grave one for Russia, France's ally. The mainstays of this alliance are: the army and economic interests....."

The letter goes on:

"Economic relations are not now distinguished by the good feeling and *solidarity* which characterized them at the beginning.

Efforts are being made to raise, among the masses of the people, distrust of Russian credit....In the French provinces a campaign is being carried on against Russian stock. Financiers and bankers cry, "*Vendez-la, vendez.*" The object is evident—to withdraw French savings (*épargne*) from Russia's safe and low-priced securities and to monopolise those savings in the hands of Franco-Jewish bankers."

This part of the subject is not pursued further*. As to the other 'mainstay of the alliance'—the army, the writer says that reforms have been following each other with incredible rapidity. In Russia, or Germany, a committee of experts is assembled to consider, with the greatest possible deliberation, even the modification of a simple regulation, because, he continues :

"Great armies know with what extreme (almost pedantic) caution reforms have to be introduced. Here, in France, everything is being rushed through, in a few weeks. . The fundamental idea of the projected re-organization is the reduction of the term of service to two years. Staff officers with theories, have been working at this project, for a long time....The measure will undoubtedly be received with enthusiasm by the mass of the people, and especially by the socialists, but what effect will it have on the army itself? The peace establishments will be half filled with the raw-material—with untrained recruits."

After referring, at some length, to various other recent measures and reforms, which (in his opinion) do not tend to the good, or efficiency, of the French army, the writer concludes :

"Up to the present the French army has rightly enjoyed the respect of its European brothers in arms. It was an army organized in accordance with the demands of military science—well equipped, with a strong spirit and strict discipline....Now, with the reforms of General André, it may change its character and significance ; it may become a "political army"—no longer formidable to foreign enemies, but turbulent and arbitrary in its own country."

Two days after the appearance of this letter in its columns, the *Novoe Vremya* published a leading article calling attention to it, and putting forward with considerable clearness, another view of the case, *i.e.*, the dearth of men available for the army in France. As the article has the merit of brevity, perhaps it may be reproduced here *in extenso*. It is headed :

DANGEROUS FANTASIES.

"In his last letter our Paris correspondent, brings forward some interesting, but unfortunately disquieting, facts concerning the French army. He says, among other things, that the fundamental idea of the re-organization scheme for the French army is—the reduction of the period of service to two years.

*A passage in a letter from the *Times* own correspondent at Petersburg seems to throw a side-light on the matter. He says : "A propos of French opinion, I may add that at the present moment the share-holders of French metallurgical companies in Russia, several of which, it appears, will shortly have to liquidate, are extremely angry on account of their losses.....extensive disaster is prophesied, and stock is depressed on the market in consequence."

In this connection it is not so much the idea itself that is interesting, as the question how the French can possibly introduce the idea into practice. At present, with the population of France at 39 millions, with its small increase, the number of young men annually attaining the military age (taking the average for the last five years) was 335,000. Of this number there were actually taken to serve, annually, some 262,000 men, or 78 per cent. of the total number called up. The remaining 22 per cent. were excused military service, exclusively on the ground of physical unfitness.* But, because of the dearth of men, even out of those physically unfit, about 6 per cent. of the strongest are selected and enrolled in the reserve of the subsidiary services.

It is necessary to have recourse to extreme measures, such as these, even now (with the period of service at 3 years) when the army annually passes to the reserve, only a little more than one-third of its strength.

What will happen, then, when the two years' term of service is introduced? The army, after passing more than half its numbers to the reserve, will require, to complete its establishments on a peace footing, an equal number of new recruits—*which the population of France will not be in a position to furnish*. In the event of the introduction of this new reform the Minister of War will inevitably receive from the civil authorities, the very first year it is tried, the same reply that was once given by Napoleon to Murat, who had asked for reinforcements: "*And where on earth are they to come from?*"

At present a two years' term of service exists only in Germany; in adopting it, the German Military Authorities had in view the utilization of the surplus numbers of young men by passing them through the ranks of the army.† That is, they aimed at what France has already arrived at. But what are the French "staff officers with theories" (to use our correspondent's words) aiming at? A fine idea! A nation, however, is defended not by academic theories or the excellent intentions of their authors, but by a strong army, organized in accordance with the requirements of the country."

The fact that, in comparing the military capabilities of France and Germany, it must be remembered that while France is doing her utmost, Germany, on the other hand, has, in the matter of men available, a very considerable margin to fall back on, is, of course, nothing new. The difficulties experienced in France, in filling the ranks of her army, were briefly referred to in a note which appeared in the January number of this *Journal*.

But it was hardly to be expected that the prominence given to this fact, and the emphasis laid on it by a Russian paper of the

*Exemption on family grounds, in France, has only a relative meaning. Such men serve from 1—2 years. Clerical students are not exempted: on completing one year's service, they (and medical students) are passed to the reserve of the medical and Hospital services.

†At present out of the total numbers of young men liable to service in Germany, only 51 per cent. are actually taken to serve.

standing of the *Novoe Vremya*, would be much appreciated in France ; and as a matter of fact "*pays du knout*," "*peuple le plus retardataire*" and "*bouchers de Blagovetchensk*" are some of the terms of endearment which have been recently applied to their Russian allies by French newspapers.

Apart from the questions raised, by the Russian newspaper, as to details of French army organization, a certain amount of interest seems to lie in the hint that the "alliance" of which we have, from time to time, heard so much, may, under certain circumstances, not have quite all the cordiality or importance which is sometimes claimed for it.

THE GERMAN EXPEDITIONARY CORPS FOR CHINA.

BY LIEUTENANT-COLONEL ROGALLA VON BIEBERSTEIN.

(Contributed by the Intelligence Branch.)

Translated from the "Militärische Blätter."

As a consequence of her newly inaugurated foreign policy in China, between the 27th July and 4th August, Germany found herself obliged to despatch an expeditionary corps to protect her interests in that part of the world : this corps had been preceded on the 3rd July by a smaller force consisting of two marine battalions, one field battery and a pioneer detachment, which later on was reinforced by four battalions, one squadron, two field batteries, one heavy battery, one pioneer company and a railway company. As events in China assumed more serious proportions, an Imperial order, dated the 25th June, ordered the formation of a small expeditionary corps for China, to consist of the 1st and 2nd Marine battalions, a battery of field artillery and a pioneer detachment. Major-General von Höpfner, commanding the expedition, was invested with the powers of a divisional commander, and his staff consisted of one chief staff officer, one captain, one subaltern, one principal medical officer, one chief paymaster, and one Protestant and one Roman Catholic parson ; an order was also issued for the formation at Kiel and Wilhelmshaven of a reserve battalion for each of the 1st and 2nd Marine battalions. The force consisted entirely of volunteers from the active army and the reserves, and was formed in Wilhelmshaven, where the Lloyd steamer *Frankfurt* arrived on the 24th June, followed the next day by the *Wittekind*. The 2nd Marine battalion, the 5·8 centimetre field battery and the pioneer detachment were embarked on the *Frankfurt*, and the 1st Marine battalion and the officer commanding the expedition, Major-General von Höpfner, on the *Wittekind*. The 1st Marine battalion was brought by special train from Kiel to Wilhelmshaven on the day of embarkation. The 2nd Marine battalion was complete on the 24th June, with the exception of the selected volunteers from all the army corps necessary to bring it up to war strength, and it was inspected by its commander in field service order on that date. The

troops received a great coat for winter, and khaki uniform for summer wear, in addition to their ordinary uniform. The 600 and odd volunteers began to arrive on the 25th June and the following days.

Whilst the Lloyd Company had to provision the 2,500 men from the day of their embarkation to that of their disembarkation in China, the commissariat department in Wilhelmshaven had to provide rations for three months, and that department was consequently kept in the greatest activity day and night. In addition to hundreds of barrels to be filled with beef, ham and mutton, there were also over 600 boxes to be packed with all manner of provisions, such as fruit, meat, biscuits, preserved fruits, corned beef, sugar, tea, coffee, vegetables, etc., and to be shipped on board the Lloyd steamers. All provisions were packed in quantities of 125 lbs. weight each, and put in soldered tin boxes, these again were placed in wooden boxes, bound with iron bands; these provisions alone took up 700 cubic metres of space on board, and in addition there were hospital necessities, liquor, ammunition, and other war matériel.

On the 2nd of July the Emperor inspected the two marine battalions and made them a speech, and on the 3rd of July they left Wilhelmshaven; their departure was originally fixed to take place several days earlier, but was postponed on account of the unexpected visit of the Emperor. The entire mobilisation and equipment was completed in five days; both battalions were 1,134 men, the field battery six guns and 176 men, and the pioneer detachment 29 men strong, respectively. On its arrival in China, General von Höpfner's force was to be joined by the 3rd Marine battalion, 1,134 strong, a marine field battery of six guns and 176 men, a naval artillery detachment of ten guns and 208 men, and 264 other men belonging to different branches of the service, so that his total force would amount to 4,255 men and 22 guns. Affairs in China assuming a still more serious aspect, the despatch of a yet stronger force was deemed necessary, and on the 3rd of July the Emperor ordered an East Asian Expeditionary Corps to be formed. This corps was to consist of the 1st and 2nd East Asian infantry brigades, each consisting of two regiments; the East Asian cavalry regiment of three squadrons, to be formed at Potsdam; the East Asian field artillery regiment, in two divisions, each consisting of two batteries; a light ammunition column; half a light field howitzer ammunition column and a 15 centimetre field howitzer battery. The artillery divisions were formed in Jüterbog and the infantry companies in various garrisons, *viz.*, in Berlin, Danzig, Königsberg, Posen, Breslau, Dresden, Magdeburg, Cassel, Frankfurt on the Main, Altona, Hanover, Stettin, Minden, Coblenz, Stuttgart, Strassburg, Metz, Carlsruhe and in several Bavarian garrisons. The following corps and units were also formed:—The East Asian Pioneer battalion in Harburg, a telegraph detachment in Berlin, a railway company in Berlin, a hospital company in Flensburg, an ammunition column detachment, an infantry ammunition column, an artillery ammunition column, a field howitzer ammunition column and a heavy battery ammunition column.

The transport consisted of two provision columns, with 118 carts. The staff of the hospital ship *Savoya* consisted of eight doctors and

four assistants. The strength of each of the four regiments in officers was : 1 commanding officer, three staff officers, eight captains (company commanders); nine or ten 1st lieutenants and 25 or 26 lieutenants. The strength in officers of the expedition was 326 officers and 94 doctors. Doctors were appointed to units in the following proportion: four per infantry regiment, and two per cavalry regiment and pioneer detachment. The hospital company included eight, the four field hospitals 24, the base hospital 19, and the hospital ship 10 doctors.

The total strength of the expeditionary corps was 8,758 combatants, made up as follows: infantry, 210 officers and 6,380 men; cavalry, 26 officers and 536 men; artillery, 51 officers and 1,066 men; pioneers, 26 officers and 536 men; and 1,546 non-combatants. As regards horses, it was estimated that 5,100 would be required, out of which about 4,000 would go to the transport and various ammunition columns; the horses were all to be purchased in Australia and America, and only the staff officers' chargers and some 20 other horses accompanied the expedition. The total combatant strength available for field operations, including the 300 men already at Tsintao and Tientsin, amounted to about 14,500 men and 52 guns. The men selected for the expedition were taken, as far as possible, from those in their last year of service.

An advanced party, consisting of 20 officers and officials and 120 men, preceded the expedition, and arrived in Genoa on the 22nd of June; its duty was to make all the necessary preparations for the disembarkation of the expedition, and to take over and look after the purchased horses. This party was under the command of Major von Falkenhayn, who had been a military instructor in China for several years and knew the language.

The summer clothing of the troops comprised three khaki drill suits per man, made of much more durable material than the English khaki, and a straw hat, whilst General von Höpfner's force was also provided with tropical helmets. The tropical helmet proved itself an unpractical head-dress, as it presses on the back of the neck when firing in the lying down position and is very apt to be knocked off when sloping the rifle. The force was armed with the latest pattern rifle and field gun, and the 1898 pattern rifle and bayonet was issued instead of the 1888 pattern, from which it differs slightly. The new weapon is somewhat shorter than the old one, but what it has lost in length, it has gained in accuracy and rapidity of fire. The magazine of the new pattern is made to hold seven cartridges instead of five, as in the old rifle. An important alteration, which also tends to better shooting with the new rifle, is that the bayonet, instead of fixing on to the barrel, is constructed so as to fix on to the stock; the 1898 pattern carbine is very much the same as the rifle, except that it is shorter.

In order that the troops might become accustomed to their new weapons, they all went through a course of musketry and manual and bayonet exercise for a period of from seven to eight days; by this means officers also became acquainted with their men, and the men with their officers. Great progress was made in the use of the new rifle, and its extreme handiness was quickly recognised. The musketry course

began with five rounds at 200 yards, so as to accustom the men to the peculiarities of the rifle, and then went on to individual practice at moving and stationary targets, and concluded with section and group firing. The results were astounding. Musketry practice was also to be carried on during the voyage at floating targets, so that the troops would be perfectly acquainted with their rifles by the time they arrived in China. The clothing and equipping of the expeditionary corps, in the short time available, entailed an enormous amount of labour. The organisation of the German Army is not constituted for the despatch of an expedition across the sea to tropical climates, and it possesses neither the necessary uniforms nor equipment; nevertheless, there was no hitch in the execution of this unexpected mobilisation.

The uniforms were made by the clothing department of the Guards Corps, which employed 800 military tailors for this purpose, and within a few days 12,000 jackets and overcoats were delivered, and by the 19th of July the whole expeditionary corps had received all its clothing, with the exception of the tropical helmets, which were afterwards discarded and replaced by straw hats. The reserve clothing, etc., was packed in zinc boxes and sent by rail to the ports of embarkation, and despatched by ship later on. The expedition was abundantly provided with tents, waterproof sheets, mosquito nets, etc.

The following articles of kit and equipment were taken by the officers:—

(1) *Carried on the person.*—Straw hat, jacket, a pair of trousers, a pair of long boots with double soles, stocks, a pair of epaulettes, sword, sword knot, sword belt, a pair of brown gloves, revolver with case, field glasses with case, whistle with cord, pocket map, bandages, chamois leather money bag, compass with case.

(2) *Packed.*—Jacket, two tropical suits of light brown drill, a pair of boot soles, two pairs of cloth trousers, two field caps, helmet, two pairs of boots, four black stocks, a waistcoat or leather jacket, overcoat, cap, four pairs woollen gloves, three pairs brown leather gloves, camp bed with air cushion, mosquito net, two pairs of epaulettes, sword knot, wooden box, canteen box, dressings and bandages, pair of braces, designation badge with name inscribed, grey waterproof linen valise, four uniform shirts, two woollen shirts, nine pairs of socks, twelve handkerchiefs, three towels, four pairs of drawers, housewife, supply of trouser buttons, pocket book and notepaper, writing case, a folding writing table, match box, waterproof havresack, knife and fork, lantern, tin of insect powder, tobacco pouch and pipe, two pairs of mittens, woollen cummerbunds, woollen blanket, flask with strap, tunic (for special occasions).

The following is the pay of officers and men of the expeditionary corps :—

Rank.					Monthly pay.	Gratuity on mobilisation.
					£ s. d.	£ s. d.
Divisional commander	...	...	...	...	106 0 0	120 0 0
Brigade	ditto	...	...	...	71 0 0	100 0 0
Regimental	ditto	...	...	...	56 0 0	75 0 0
Battalion and battery commander	...	...	...	...	43 5 0	63 0 0
Captain	...	...	...	...	30 0 0	60 0 0
1st Lieutenant (commanding a company)	...	...	...	...	21 5 0	60 0 0
1st Lieutenant	...	...	...	...	15 0 0	50 0 0
Lieutenant	...	...	...	...	12 0 0	50 0 0
Sergeant-Major	...	...	...	...	6 0 0	...
Staff Sergeant	...	...	...	...	2 17 0	...
Sergeant	...	...	...	...	2 9 6	...
Under Officer...	...	...	...	...	1 16 0	...
Lance-Corporal	...	...	...	...	0 16 6	...
Private	...	...	...	...	0 13 6	...

Every possible measure was taken to preserve the health of the troops; in addition to being provided with suitable clothing, every man was supplied with a waterproof sheet and a mosquito net. Tents were also provided. The number of doctors, stretcher bearers and hospital orderlies accompanying the expedition was considerably greater than provided for in a European campaign; there were altogether 91 military doctors, whereas a British corps in South Africa of the same strength would have only 62, of whom 12 would be civilians. The German field hospitals belonging to the expeditionary corps have six doctors whereas the British have only four.

Owing to the large number of men who volunteered for the expedition, it was possible to exercise the greatest care in their selection, and only those were accepted who were absolutely physically sound, and pronounced fit for service in a tropical climate. A pamphlet was published containing simple rules for the preservation of health during the voyage and in China and was issued to all officers to enable them to instruct their men on this subject.

The peculiar climatic conditions of North China, where the summer is almost tropical and the winter is much the same as with us, necessitated special arrangements being made for the accommodation of the troops both during the summer and the winter. Material for the construction of huts was to be sent out to China, in order to enable camps to be formed on suitable and sanitary sites, and to obviate the necessity of the men having to occupy native houses. The clothing issued to the troops was also suited to the climatic conditions, and they were provided with different clothing for the hot and cold seasons; their summer uniform consists of a suit of drill and a straw hat, whilst for winter the uniform is cloth with greatcoats; they were also provided with woollen under-clothing and cummerbunds, and even with furs for winter wear.

Particular attention was paid to the proper feeding of the troops, and to the variety of food provided, and in order to guard against scurvy on board ship, a plentiful supply of vegetables, lime juice, etc., was laid in. In order to ensure the troops being supplied with pure drinking water, the expedition was provided with specially constructed vessels in which to boil water and also with large Birkefeld filters, which were to be under special medical supervision. It was at first proposed to issue each individual with a small filter, but eventually was decided not to, as, in the first place, they are very apt to get out of order; and, secondly, unless they are very carefully looked after, they are more likely to render the water impure than to purify it. Drills for well boring purposes were also supplied and specially selected medical officers were appointed to analyze the water procured from all wells, before the troops were to be allowed to drink it.

The medical arrangements, both as regards *personnel* and *matériel*, were, as has already been stated, very much more complete, than they would be in a European campaign.

The doctors were in the proportion of one to every 120 men; in addition to the hospital company and the four field hospitals, each equipped for 200 sick, there was also the base hospital consisting of 127 tents and 15 huts, to accommodate 3,000 sick. One of the North German Lloyd steamers was fitted up as a hospital ship to bring back invalids. Ambulance waggons fitted up with all the most modern hygienic arrangements, clinical apparatus, etc., accompanied the expedition to serve on the lines of communications.

The hospital ship *Gera* was fitted up with an apparatus for the use of the Roentgen Rays, and another accompanied the expedition; the latter consisted of two carts coupled together, one of which contained the Roentgen tubes, etc., and the other a 3-horse power oil motor, which drove a small dynamo, so that the inductor, etc., could be taken off the one cart and into the hospital, whilst the motor and dynamo remained on the other cart outside. The *Sardinia* was also to be fitted up as a hospital ship with 400 beds for the use of the sick, in addition to the provisional hospital ship already out in China and the two German hospitals, one at Yokohama and the other at Tsintao.

The rations of the troops on board the transports *en route* to China were as follows : for breakfast—tea or coffee, with milk and sugar and black or white bread and butter ; dinner—soup, fresh meat, vegetables and potatoes, and twice a week, pudding ; supper—soup and a hot dish of meat, or bread and butter. Two or three times a week the men were allowed beer, and every day either lime juice or cold tea. Each ship carried provisions for 150 days, although the voyage only takes about 42 days.

A field bakery, consisting of three officers and 190 bakers, was formed at Tempelhof, and accompanied the expedition ; it was divided into three sections, and each section consisted of twelve field ovens, twelve store waggons, and two provision waggons.

A postal corps and a telegraph corps also accompanied the expedition, the latter consisted of from 15 to 20 men, and was equipped with field and wireless telegraphic apparatus and heliographs. A cable was to be laid between Shanghai and Kiaochow and thence to Taku, and by this means direct communication could be maintained with Germany, without being subjected to English, or other foreign influences.

For the transport of the expeditionary corps together with all its stores and *matériel*, 10 North German Lloyd and 20 of the Hamburg-American Companies' steamers were chartered, in all of which considerable alterations in the fittings had to be made. The officers were accommodated in the first and second saloon cabins, none of which were to hold more than two people ; and the men between decks, which were all spacious and well ventilated. A fortnightly transport service was established between Germany and China for the regular supply of stores and other necessities.

One of the great difficulties attending the expedition was the question of supplying the necessary horses for the cavalry, transport, etc. The experiences gained from the South African war go to prove that the European horse does not stand the sea voyage, nor the change of food and climate well, and consequently it was decided to purchase horses in Australia and America, and to have them shipped direct to China to meet the corps there on disembarkation. A first class light cavalry horse can be bought in Australia for £7, which in Germany would cost £40, and the distance from Australia to China being much shorter than from Germany, the horses would have also more time to recover from the effects of the voyage. A number of dock labourers were despatched to Kiaochow to construct repair workshops for the use of the fleet.

A well known publishing firm offered to supply the Government with 12,000 copies of a map of China gratis, the offer was accepted and the maps delivered in a day and a half.

In equipping and fitting out the expeditionary corps, the experiences of the British in South Africa served as a guide. It was maintained in many quarters that our field artillery was too heavy for the work required from it in China, and mountain guns, similar to those

employed by the Russians in their Asiatic campaigns, were recommended in its stead. Mountain guns, however, do not form a part of the armament of the German Army, and even if Krupp or any other firm were able to provide them in sufficient time, it would not have been advisable to send the artillery into the field armed with a weapon to which it was unaccustomed. The substitution of a straw hat for the tropical helmet was adversely criticised by those who knew the tropics, as the former does not afford sufficient protection to the head or back of the head. It was also suggested that the infantry should be supplied with a number of maxim guns, but as it was unacquainted with the mechanism of that arm, this proposal was vetoed; besides which many of the men-of-war were armed with light quick firing guns, which, if necessary, could be used on land.

The chief danger that the expedition will have to contend with is the climate, which is very conducive to malaria and dysentery.

NOTICES OF BOOKS.

ORGANISATION AND EQUIPMENT.

SUBJECT (G).

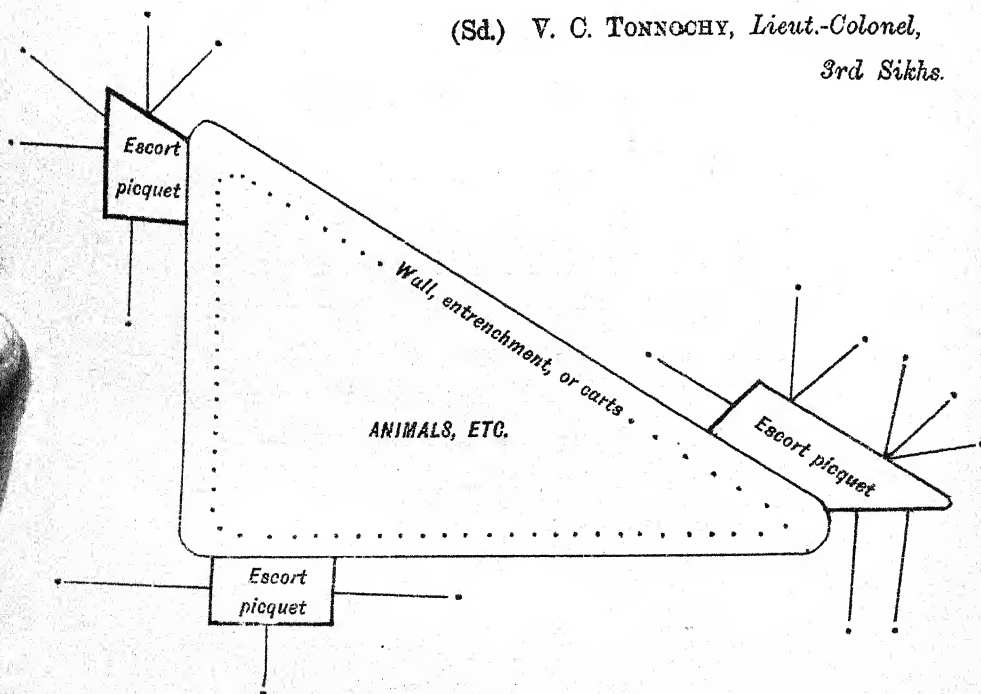
BY LIEUT. T. E. MADDEN, 17TH B. I.

This is a handy little book compiled from the many official publications laid down for Subject G, and contains in condensed form a mass of information regarding the Organisation and Equipment both of British and Native Troops, while an Appendix is added giving selected questions and answers from Examination Papers, so as to enable intending candidates for the various examinations to test their knowledge of the subject.

A CONVOY ENCAMPMENT.

With reference to the recent excellent pamphlet on Service Encampments issued by the Quarter Master General's Department, I would suggest the accompanying as an alternative plan for Convoy Encampment or lagers where the force for defence is small in proportion to the space for defence. It will be noticed that fire can be delivered in any direction by two of the three picquets and in one direction by all three. This in addition to flanking fire.

(Sd.) V. C. TONNOCHY, *Lieut.-Colonel,*
3rd Sikhs.



List of Essays received for Gold Medal Competition, 1901.

No.	Motto.
1	Fortior qui se Vincit.
2	Vulneratus non Victus.
3	Flecte viam Velis.
4	Experientia docet. Forewarned. Forearmed.
5	Taught by War, and deceived by Peace.
6	Fortiter et Recte.
7	Ora et Labora.
8	Omnia Mutantur, Nos et Mutamur in illis.
9	The old order giveth place to the New.

Prize Essay Gold Medallists.

- 1872.....ROBERTS, Lieut.-Col. F. S., V.C., C.B., R.A.
 1873.....COLQUHOUN, Capt. J. A. S., R.A.
 1874.....COLQUHOUN, Capt. J. A. S., R.A.
 1879.....ST. JOHN, Maj. O. B. C., R.E.
 1880.....BARROW, Lieut. E. G., S.C.
 1882.....MASON, Lieut. A. H., R.E.
 1883.....COLLEN, Maj. E. H. H., S.C.
 1884.....BARROW, Capt. E. G., S.C.
 1887.....YATE, Lieut. A. C., S.C.
 1888.....MAUDE, Capt. F. N., R.E.
 YOUNG, Maj. G. F., S.C. (specially awarded a silver medal).
 1889.....DUFF, Capt. B., S.C.
 1890.....MAGUIRE, Capt. C. M., S.C.
 1891.....CARDEW, Lieut. F. G., S.C.
 1893.....BULLOCK, Maj. G. M., Devon. Regt.
 1894.....CARTER, Capt. F. C., Northumberland Fusiliers.
 1895.....NEVILLE, Lieut.-Col. J. P. C., S.C.
 1896.....BINGLEY, Capt. A. H., S.C.
 1897.....NAPIER, Capt. G. S. F., 2nd Bn. Oxfordshire Light Infantry.
 1898.....MULLALY, Maj. H., R.E.
 CLAY, Capt. C. H., S.C. (specially awarded a silver medal).
 1899.....NEVILLE, Col. J. P. C., S.C.
 1900.....THUILLIER, Capt. H. F., R.E.
 LUBBOCK, Capt. G., R.E. (specially awarded a silver medal).

MacGregor Memorial Silver Medallists.

- 1889.....BELL, Col. M. S., V.C., R.E. (specially awarded a gold medal).
 1890.....YOUNGHUSBAND, Capt. F. E., K. Dn. Gds.
 1891.....SAWYER, Maj. H. A., S.C.
 RAMZAN KHAN, Havildar, 3rd Sikhs.
 1892.....VAUGHAN, Capt. H. B., S.C.
 JAGGAT SINGH, Havildar, 19th P. I.
 1893.....BOWER, Capt. H., S.C. (specially awarded a gold medal).
 FAZALDAD KHAN, Dafadar, 17th B. C.
 1894.....O'SULLIVAN, Maj. G. H. W., R.E.
 MULL SINGH, Sowar, 6th B. C.
 1895.....DAVIES, Capt. H. R., Oxf. L. I.
 GUNGA DYAL SINGH, Havildar, 2nd B. I.
 1896.....COCKERILL, Lieut. G. K., 28th P. I.
 GHULAM NABI, Private, Q. O. Corps of Guides.
 1897.....SWAYNE, Capt. E. J. E., 16th B. I.
 SHAHZAD MIR, Dafadar, 11th B. L.
 1898.....WALKER, Capt. H. B., D. of Corn. L. I.
 ADAM KHAN, Havildar, Guides Infantry.
 1899.....DOUGLAS, Capt. J. A., 2nd B. L.
 MIHR DIN, Naik, Bengal S. and M.
 1900.....WINGATE, Capt. A. W. S., 14th B. L.
 GURDIT SINGH, Havildar, 45th B. I.

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The Publisher of the "ARMY & NAVY GAZETTE" begs to announce that, beginning on JANUARY 5, 1901,

COLOURED MILITARY TYPES OF THE INDIAN ARMY

Will be issued Monthly as Supplements to this paper, in the order given below :—

- I.—BENGAL. Showing a Risaldar-Major of 10th Lancers; Sowars of 15th and 18th Lancers; a Sepoy of the 2nd, and Subadar of the 5th Goorkhas; Sepoys of 20th and 25th Infantry ... Ready Jan. 5, 1901.
- II.—BENGAL. Showing Risaldars of the 1st and 2nd and Sowar of the 11th Lancers; Sepoys of the 7th and 32nd Infantry; a Subadar of the 14th and Naick of the 15th Infantry ... Ready Feb. 2, 1901.
- III.—PUNJAB FRONTIER FORCE. Showing Sowar of 1st and Risaldar of 3rd Punjab Cavalry; Sepoy and Sowar of Guides; Jemadar of 1st and Sepoy of 3rd Infantry; Gunner of No. 1 Kohat Mountain Battery ... Ready Mar. 2, 1901.
- IV.—MADRAS. Jemadar of Governor's Body Guard; Subadar of 1st and Sowar of 2nd Lancers; Sepoys of 1st and 31st Infantry; Jemadars of 14th Infantry and Sappers and Miners ... Ready April 6, 1901.
- V.—BOMBAY. Jemadar of 2nd Lancers; Sowar of 4th Cavalry; Gunner of No. 1 Mountain Battery; Subadar of 1st Grenadiers; Havildar of 5th Light Infantry; Sepoy of 29th Infantry ... Ready May 4, 1901.
- VI.—CORPS UNDER THE ORDERS OF THE GOVERNMENT OF INDIA. Showing Risaldar-Major of 2nd and Sowar of 3rd Lancers of Hyderabad Contingent; Risaldar of Central India Horse; Colour-Havildar of Deoli Irregulars; Sepoy of Malwa Bhils; Havildar of Merwara Battalion; Jemadar of 4th Infantry of Hyderabad Contingent ... Ready June 1, 1901.
- VII.—BRITISH OFFICERS OF NATIVE INDIAN CAVALRY REGIMENTS. Showing 3rd Bombay Light Cavalry; 5th Punjab Cavalry; 18th Bengal Lancers; 6th Bengal Cavalry; 13th Bengal Lancers; Central India Horse; and 2nd Madras Lancers ... Ready July 6, 1901.
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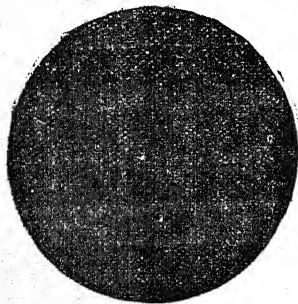
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Money Orders, Transfer Receipts, etc., should be made payable to the "Secretary."

Members proceeding to England on leave, who wish the Journal to be forwarded to them while absent from India, should inform the Secretary, and arrange for the postage.

When a member appears in orders for leave to England, his Journal is not despatched unless he asks for it, and while absent from India his subscription is not payable unless the Journal is supplied.

Members on return from furlough can obtain the numbers of the Journal that have been published during their absence, by paying the subscription for that period; and all members on returning to India should inform the Secretary of the fact.

All officers of the Royal Navy, and Army, and of Volunteer Corps in India, and Gazetted Government Officers shall be entitled to become members on payment of the entrance fee and annual subscription.

Life members of the Institution will be admitted on the following terms :—

Rs. 50+ entrance donation = Rs. 55.

Ordinary members of the Institution will be admitted on payment of an entrance fee of Rs. 5 on joining, and an annual subscription of Rs. 5 *to be paid in advance*. The period of subscription commences on 1st January.

Sergeants' Messes and Regimental Libraries, Reading and Recreation Rooms can obtain the Journal on payment of the annual subscription (Rs. 5) only, but cannot be life members.

When a member joins the Institution on or after the 1st October, having paid his first annual subscription, he will not be charged a second subscription on the following 1st January, but it will become due on 1st January of the second year.

Rules for Contributors to the "Journal of the United Service Institution of India."

1. All papers must be written in a clear, legible hand, and only on one side of the paper. All plans must have a scale on them.

2. No remarks of a personal nature, or in any way subversive of discipline, will be permitted.

3. Anonymous contributions under a *nom de plume* will not be accepted nor acknowledged; all contributions must be sent to the Secretary under the name of the writer, and the paper will, if accepted, be published under that name unless a wish is expressed for it to be published either under his initials only or anonymously. The Executive Committee will decide whether the wish can be complied with.

4. Papers will be published, if passed by the Executive Committee of the Council.

5. The Council do not undertake to authorise the publication of such papers as are passed, in the order in which they may have been received.

6. Unless the contributor states at the end of his paper that he wishes it published complete, or not at all, the Executive Committee of the Council will make such alterations in it as they deem necessary.

7. Contributors will be supplied with twelve copies of their papers *gratis*, provided they apply for them before they are in the press.

8. Manuscripts of original papers sent for publication in the Journal will not be returned to the contributor unless he expresses a wish to have them

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Have passed into the Staff College from this establishment, of whom
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PLACES taken in the various subjects include no less than EIGHTY-
ONE FIRSTS, SEVENTY-THREE SECONDS and NINETY THIRDS.

MILITARY HISTORY: the highest marks ever given were obtained by one of our pupils and
on another occasion full marks were obtained for the "Special Campaign" paper.
For this Captain James prepares every year a pamphlet as soon as the campaign is
published in Army Orders. In the last four years the 1st place has been taken
three times.

IN MATHEMATICS, another important subject, full marks were won in one of the papers
in 1898. Ten firsts, Ten seconds, eight thirds have been taken by our pupils.

GEOGRAPHY as a separate subject was instituted in 1895, the first place was taken in 95,
97 and 99. We have Special Geography notes which can only be obtained by those
who read with us. Three firsts have been taken by our pupils.

The above results are far in excess of the results obtained by any other establishment.
Officers reading in India can be supplied with all notes, books, etc., on the special
campaign and other subjects, and with information as to how best to read for
the examination.

AUGUST, 1900.

At this Examination TEN only Passed on the Competitive List owing to the War in South Africa, and
of these the following SIX PASSED from us:—

Capt. C. G. Stewart, D.S.O.	...	...	Royal Artillery.
Capt. R. F. G. Bond	...	...	Royal Engineers.
J. R. Chancellor, Esq., D.S.O.	...	...	Royal Engineers.
Capt. R. F. Uniacke	...	...	Royal Inniskilling Fusiliers.
Capt. H. W. R. Senior	...	...	Indian Staff Corps.
Capt. C. Rattray	...	...	Indian Staff Corps.

The following SIX, who read with us, also received NOMINATIONS:—

Capt. J. S. Cayzer	...	...	7th Dragoon Guards.
Capt. J. Vaughan	...	...	7th Hussars.
V. R. Brooke, Esq.	...	...	9th Lancers.
A. Symons, Esq.	...	...	13th Hussars.
Capt. J. A. S. Tolloch	...	...	Royal Engineers.
Capt. G. Meynell	...	...	1st Batt., Shropshire Light Infantry.

And, in addition, the following QUALIFIED:—

Capt. G. McK. Franks	...	...	Royal Artillery.
Capt. W. K. Scharlieb	...	...	Indian Staff Corps.
Capt. L. A. Watson	...	...	Indian Staff Corps.
S. W. King, Esq.	...	...	Indian Staff Corps.

PROMOTION.—SIX HUNDRED AND TWENTY officers have passed, many of whom have
obtained "Special certificates" and "distinguished" in many subjects.

OTHER SUCCESS IN 1897-98 AND 1899.

WOOLWICH	...	...	Forty-seven.
SANDHURST	...	...	Ninety-seven.
INDIAN POLICE	...	...	Six.
MILITIA LITERARY	...	...	Fifty-eight.
" COMPETITIVE	...	...	One hundred and forty-one.

JOURNAL OF THE

UNITED SERVICE INSTITUTION

OF INDIA.

Published under the authority of the Council.

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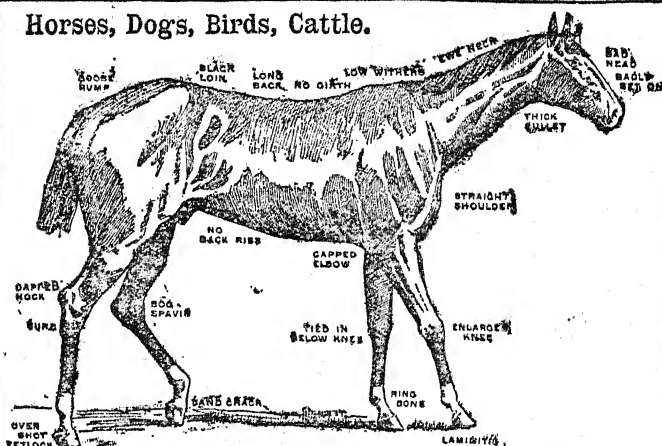
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Secretary:

United Service Institution of India :

NOTICE.

The following matters will be brought up for consideration at the annual meeting of the Council to be held in the Reading Room, at 19 A.M., on Monday, the 27th May 1901.

I.—The audited accounts for 1900.

II.—Balance sheet for the year ending 31st December 1900.

III.—Estimate for 1901.

	<i>Life.</i>	<i>Ordinary.</i>	<i>Inst. &c.</i>	<i>Total.</i>
IV.—Members on 1st January 1900...	96	1,000	47	1,143
Removed during 1900.....	0	56	3	59
	96	944	44	1,084
Joined during 1900.....	9	57	6	72
Remained on 31st December 1900	105	1,001	50	1,156

V.—Election of an Executive Committee.

VI.—Appointment of a Secretary.

VII.—Action to be taken with reference to the award of the Gold Medal for 1901.

VIII.—Selection of a subject for the Prize Essay for 1902.

IX.—Accommodation for the Institution.

UNITED SERVICE INSTITUTION OF INDIA.

Cash account for the year 1900.

RECEIPTS.	AMOUNT.		TOTAL.		EXPENDITURE.	AMOUNT.		TOTAL.	
	Rs.	A. P.	Rs.	A. P.		Rs.	A. P.	Rs.	A. P.
By balance brought forward	...	...	...	...	To Secretary's Allowance	1,200	0 0	...	...
" Government Grant-in-Aid	3,000	0 0	2,770	1 8	" Office establishment...	1,200	0 0	...	...
" Subscriptions and Donations	4,711	1 1	...	...	" Office and establishment cont.	14	0 0	...	...
" Interest	436	11 4	...	...	" Office Stationery & Mis. Printing.	217	13 9	...	...
" Advertisements	1,191	4 0	...	...	" Library and Newspapers	508	1 0	...	...
" Miscellaneous	198	0 5	9,537	0 10	" Postage	160	0 0	...	...
					" Journals	3,059	2 2	...	...
					" Rent of Premises	800	0 0	...	...
					(Rs. 2,000 0 0 Placed on Fixed Deposit)				
					Miscellaneous {	2,647	11 9		
					929 3 0 Essay medals				
					138 4 3 Journal Index				
					110 5 0 War Game maps				
					169 12 6 Other small items				
					By amount in floating account with Alliance Bank	...	...	9,806	12 8
						...	...	2,500	5 10
						...	...	12,307	2 6
TOTAL RUPEES ...			12,307	2 6	TOTAL RUPEES ...			12,307	2 6

UNITED SERVICE INSTITUTION OF INDIA.

July 1901.

CONTENTS OF SOME MILITARY JOURNALS RECEIVED
BY THE INSTITUTION. THEY ARE AVAILABLE TO
MEMBERS ONE MONTH AFTER RECEIPT IN INDIA.

Journal of the Royal United Service Institution, March 1901:—The Premier Field Marshal of England. Infantry in a new century. To India: Military, Statistical, and Strategical sketch-plan of future campaign, translation. Information relating to the Chinese Empire, translation. American operations in the Philippines. The lessons of the South African and Chinese Wars. On the employment of direct-current dynamos for the production of three-phase currents for ventilating motors on board German war-ships. Gibraltar. *April:*—Field Marshal the Right Hon'ble F. S., Earl Roberts, K.G., etc. Army reform based on some 19th century lessons in warfare. To India: Military, etc., translation. Information relating to the Chinese Empire, translation. Cavalry notes—South Africa, 1899-1900. Modern Artillery. *May:*—Medal presented by Major-General John Small, Lieutenant-Governor of Guernsey, to John Breton. The provision of officers and men for the King's Army. First military prize essay for Gold Medal Competition, Lessons to be derived from the expedition to South Africa in regard to the best organisation of the land forces of the Empire. Official report of the Russian landing parties from the battle-ships Navarin and Sissoi Veliki in Peking from May to August 1900, translation.

The United Service Magazine, April 1901:—Home coast defence and submarine mines. Notes on the evolution of Cavalry. The battle of Mars-la-tour, 16th August 1870. Frederick the Great—VIII, the campaign of 1760. Army reorganisation. The Canadian Militia system and its applicability to our own requirements at Home. Some notes on the lessons of the South African War. Jottings from South Africa. Musketry reform. The service kit of the Infantry Soldier. Mounted or Mobile Infantry. *May:*—Notes on the evolution of Cavalry. Guerilla or partisan warfare. Ashanti campaign, 1900. Frederick the Great—IX, the campaigns of 1761 and 1762. Charles deBourbon. Reflections on Mr. Brodrick's scheme of army reform. The training of an Army. Some Medico-Military War lessons. The horse in the South African War. Home defence. *June:*—Notes on the evolution of Cavalry. China in Arms. Through Colonial Gig-lamps. Guerilla or partisan warfare. The Guerilla warfare in South Africa. The most humane of Armies. Extravagance of Army life. Army medical reform. Home defence II. Suggestions for rules of ranging for Infantry.

Proceedings of the Royal Artillery Institution, February 1901:— Memoirs of General Sir John Adye, G.C.B. Recent changes in German Field Artillery material. Field glasses for service. No. 4 Mountain Battery, R.A., in the Boer War, 1899-1900. Engine traction of Artillery. The Boer War, 1899-1900. The Manœuvring of the wagons of a Field Battery. *March:—* Automatic sights. Harness and blankets. Historical retrospect of events leading to the Boer War, 1899-1900. The tactics of the Artillery Escort. Escorts for Horse Artillery. The Boer War, 1899-1900. Thoughts on coast defence suggested by the Boer War. With "B" Battery, Royal Horse Artillery, to China. Depôts and mobilization. The western glacis of India. Position of wagons and limbers in a Horse Artillery Battery acting with a Cavalry Brigade. *April:—* Ætheric signalling. The mobility of Artillery. With a section of a Field Battery on the De Wet Manœuvres. The Boer War, 1899-1900. The Dickson Memoirs.

Journal of the Military Service Institution, March 1901:— Organization of a General Staff (three essays). *May:—* Discipline in the United States Army. Uniformity of tactics. Problems of War. Cavalry training. An isthmian canal.

Journal of the United States Artillery, March—April 1901:— Spanish ordnance in the defences of Havana. Shipbuilding in Germany and the Imperial German navy. The second Boer War. The development of the Krupp Field Artillery material. A discussion of the errors of cylindro-ogival projectiles.

United Service Institution of India.

The Council have chosen as the subject for their Gold Medal Essay for 1902 the following :—

The training and equipment of Cavalry and Mounted Infantry in India and their respective rôles in War.

The following are the conditions of competition :—

- (1) The candidates must be Members of the United Service Institution of India.
- (2) Essays are limited to 16,000 words, and must be printed or type-written towards the cost of which Rs. 10 will be granted, on application, to the writer of each Essay.
- (3) When a reference is made to any work, the title of such work is to be quoted.
- (4) The Essays are to be strictly anonymous. Each must have a motto, and enclosed with the Essay there should be sent a *sealed* envelope with the motto written on the outside and the name of the candidate inside.
- (5) Essays not received by the Secretary on or before the 1st March, 1902, will not be accepted.
- (6) The Essays will be submitted for decision to Referees chosen by the Council.
- (7) The name of the successful candidate will be made known at the Annual Meeting of the Council in May or June, 1902, and his Essay will be printed in the Journal.
- (8) All Essays submitted are to become the property of the United Service Institution of India *absolutely*, and authors will not be at liberty to make any use whatsoever of their Essays without the sanction of the Council.

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C. H. CLAY, CAPTAIN,

Simla, July 1901.

Secretary.

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DOUGLAS STEWART,

Secretary,

Calcutta.

United Service Institution of India.

JULY 1901.

List of Books added to the Library during the last quarter.

SUBJECT.	Author.	Date.
Oliver Cromwell	Morley, J.	1900
Napoleon, the last phase	Rosebery, Lord	1900
The Story of the War in South Africa, 1899-1900.	Mahon, Captain A. T.	1901
Shifting Scenes	Malet, Sir E.	1901
An Absent-minded War ... ..	.....	...
A Common Sense Army ... ..	.....	1901
Speeches by Lord Curzon of Kedleston, 1898-1901.	.....	1901
The Indian Borderland	Holdich, Colonel Sir T. H.	1901
The Art of Marching	Furse, Colonel G. A.	1901
In the Ranks of the C. I. V.	Childers, E.	1900
My Experiences of the Boer War	Sternberg, Count	1901
The Conduct of War	Goltz, Lt. General Von der	1899
The Campaign in the Free State and its lessons.	Caunter, Major J. E.	1901
In Tibet and Chinese Turkestan	Deasy, Captain H. H. P.	1901
The tactics of today	Callwell, Major C. E.	1903
Cavalry Drill	Official	1898
The New South Africa	Bleloch, W.	1901

The following Books were kindly presented to the Library.

SUBJECT AND AUTHOR.	Presented by	Date.
The Order of St. John of Jerusalem, by Major A. C. Yate.	The author ... ..	...
War in Turkomania, by Grodekoff ...	Colonel Sir J. W. Murray, K.C.B.	1883
Military Report on the Mishmi Country, by Lieutenant G. L. S. Ward.	Intelligence Branch ...	1901
Field Service Regulations of the German Army.	War Office	1900
Hand-book of the Belgian Army ...	"	1899
Hand-book of the Armies of the Balkan States.	"	1900
Organisation of Voluntary Medical Aid in War in Austria, France, and Germany.	"	1901
Hand Book of Turkish Army ...	"	1900
Instruction and Training of the Troops of the German Army.	"	1900
Field Day Examples with Notes and Maps, by Major J. H. Balfour.	The author	1901

UNITED SERVICE INSTITUTION OF INDIA.

Balance Sheet for the year ending 31st December 1900.

LIABILITIES.	AMOUNT.			ASSETS.			AMOUNT.		
	Rs.	A.	P.				Rs.	A.	P.
<i>Nil.</i>	...	...	...	By amount in Floating account in Alliance Bank on 1st January 1901	...	...	2,500	5	10
				" Rs. 5,500 in 3½% Government Paper @ Rs. 96-0-0	...	...	5,280	0	0
				" Fixed Deposit in Alliance Bank, Rs. 7,500 @ Rs. 4½%	...	...	7,500	0	0
Balance Credit ...	15,640	5	10	Furniture valued at	...	...	360	0	0
TOTAL RUPEES ...	15,640	5	10	TOTAL RUPEES	...	...	15,640	5	10

SINLA, May 1901.

C. H. CLAY, CAPTAIN,
Secretary, U. S. I. of India.

UNITED SERVICE INSTITUTION OF INDIA.

Estimate for the year 1901.

RECEIPTS.	AMOUNT.		TOTAL.		EXPENDITURE.	AMOUNT.		TOTAL.	
	Rs.	A. P.	Rs.	A. P.		Rs.	A. P.	Rs.	A. P.
By Floating Balance brought forward	...	...	2,500	510	To Secretary's and Asst. Secretary's allowance	1,800	0	10,165	0
" Government Grant-in-Aid	3,000	0			" Office Establishment	600	0	2,685	510
" Subscriptions	4,800	0			" Office and Establishment Contingencies	15	0		
" Miscellaneous Receipts	100	0			" Office Stationery and Miscellaneous Printing	300	0		
" Advertisements	1,400	0			" Newspapers	530	0		
" Interest on Reserve Fund	450	0	9,750	0	" Books	180	0		
Rs. 13,000	...	...			" Postage	3,100	0		
					" Journals	800	0		
					" Contributions to Journals	40	0		
					" Rent of Premises	800	0		
					" Furniture	800	0		
					" Miscellaneous	2,000	0		
					" Transfer to Reserve Fund (fixed deposit)	...	...
					" Balance Credit	...	...
TOTAL RUPEES ..			12,250	510	TOTAL RUPEES ..			12,250	510

C. H. CLAY, CAPTAIN,
Secretary, U. S. I. of India.

SIMLA, May 1901.

PROCEEDINGS of a Meeting of the Council of the United Service Institution of India, held on the 27th May 1901.

P R E S E N T :

The Hon'ble Major-General Sir E. R. Elles, K.C.B., Member of the Governor-General's Council, (Presiding).

Major-General B. Lovett, C.B., C.S.I., R.E., Retired List.

Surgeon-General W. Taylor, C.B., M.D., A.M.S., Principal Medical Officer, H. M's Forces in India.

Major-General R. Wace, C.B., R.A., Director-General of Ordnance in India.

Major-General G. Henry, Quarter Master General in India.

Veterinary-Colonel H. Thomson, C.B., A.V.D., Principal Veterinary Officer in India.

Colonel G. D. Stawell, Offg. Director of Military Education in India.

Colonel R. M. Greenfield, Offg. Dy. Adj.-Genl. in India.

Colonel E. DeBrath, Offg. Secretary to the Government of India, Military Department.

Lieut.-Colonel H. Finnis, R.E., Deputy Director-General of Military Works.

Major W. D. Thomson, Assistant Judge Advocate General.

Captain C. H. Clay, 43rd Gurkha Rifles, *Secretary*.

1. **RESOLVED.**—That the Audited Accounts for 1900, be passed as correct.

2. **RESOLVED.**—That the Balance Sheet for 1900, and Estimate for 1901, be accepted.

3. RESOLVED.—That the Executive Committee for the current year shall consist of:—

Colonel R. M. Greenfield.

Major W. D. Thomson.

Major E. W. S. K. Maconchy, D.S.O.

4. RESOLVED.—That Captain C. H. Clay, 43rd Gurkha Rifles, be re-appointed Secretary.

5. RESOLVED.—That the winner of the Gold Medal for the Prize Essay for 1901, is Lieut.-Colonel G. P. Ranken, Commanding 46th Punjab Infantry. Also that the Essays submitted by:—

(1). Captain W. B. James, 2nd Bengal Lancers.

(2). " W. C. Walton, 4th Bombay Rifles.

(3). Lieutenant A. E. Turner, Royal Engineers, be published when space allows.

6. RESOLVED.—That the subject for the Gold Medal for the Prize Essay for 1902, be—

"The Training and Equipment of Cavalry and Mounted Infantry in India and their respective roles in War."

7. RESOLVED.—That the question of accommodation be further considered by a Committee composed as under:—

Major-General B. Lovett, C.B., C.S.I., R.E.

Colonel E. DeBrath, S.C.

Lieut.-Colonel H. Finnis, R.E.

Captain C. H. Clay, S.C., (Secretary).

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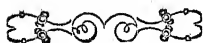
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DOUGLAS STEWART,

Secretary.

The Journal

OF THE

United Service Institution of India.

VOL. XXX.

JULY 1901.

NO. 144

“THE PRACTICAL TRAINING OF BRITISH AND NATIVE
TROOPS IN INDIA WITH REFERENCE TO THE LES-
SONS OF THE WAR IN SOUTH AFRICA.”

BY LIEUTENANT-COLONEL G. P. RANKEN, 46TH PUNJAB INFANTRY.

Motto : Fortiter et Recte.

Since the commencement of the war in South Africa the Press and the Periodicals have been flooded with a sea of articles on the subject of our military efficiency and our military training. So far, however, from these articles tending to throw light on the weak points of our system, they have been so numerous as to render it difficult to separate the words of those who spoke with the authority of knowledge and experience, from the opinions of those whose only qualifications were a hastily acquired and superficial smattering of military matters, and a ready pen. If any instance were necessary in this connection, it would suffice to mention the controversy that raged in the earlier days of the war round this question of the quality of our guns. A significant comment on the value of the opinions then expressed was the total absence of any complaints from the artillery officers who handled the guns. In like manner, much that has been written on the subject of our training may either be largely discounted or else brushed aside as being merely the opinions of men who are ignorant of the subject on which they write; but the enormous number of articles of this nature that have appeared make it difficult to discriminate between what is of value and what valueless. Many points are of course open to controversy, and these points will not be finally settled until an authoritative history of the war has been written.

Into these problems I do not propose to enter, but certain points remain which I think will be universally admitted, and it will be convenient to specify them in order, as they clearly show the lines on which we should work in training our troops for warfare under modern conditions. They are as follows:—

- 1st.*—Modern rifles have enormously increased the power of the defence, consequently a much larger front may be held by a given force than was previously anticipated. Longer turning movements are therefore necessary, and to deliver these, great mobility amongst a certain portion of the attacking force is necessary.
- 2nd.*—Smokeless powder renders it difficult to locate the position or estimate the numbers of the defence. Greater skill in scouting is consequently called for.
- 3rd.*—The range and accuracy of modern rifle fire render it necessary for deployments to take place at a much greater distance from the enemy; extensions must therefore be much wider than hitherto, and the distance between successive lines must be greater than has hitherto been recognised as requisite. Communication, both laterally and from rear to front, has thus become more difficult, and executive command in consequence devolves on the commanders of the smallest units, on whose training, therefore, depends the successful carrying out of the general's intentions.
- 4th.*—Against an entrenched defence artillery has not shown the increased silencing and demoralizing power that was expected from it, and the final advance against the position presents greater difficulties than hitherto. Greater skill in taking the fullest advantage of cover is thus called for so as to bring as many men as possible into the firing line for the final assault and to bring this firing line sufficiently close to the enemy's position for the final assault to have any prospect of success.
- 5th.*—The value of skilful entrenchments not only to the defence, but at times to the attack especially in securing a line or position once gained.
- 6th.*—The war shows us how much depends on the skilful use of the rifle and the fact of communication from rear to front, except in the most fortunate circumstances, being impracticable, supply of ammunition to the firing line is, in most cases, impossible, and this emphasises the duty of each man to make the best use of the ammunition he carries on his person.

It will be noticed that I have avoided all reference to the tactical problems which modern conditions may require to be solved. The solution of these problems will lie with generals in the field and are

apart from the subject of this essay. But, to enable troops to carry out the intentions of their commanders, it is essential that they should be trained to manœuvre with due regard to the conditions I have above enumerated, and our particular attention should, therefore, be given to training our troops in accordance with the requirements of these conditions.

THE COMBINATION OF INDIVIDUALITY.

The prolonged resistance the Boers were able to offer to our troops in the Transvaal was undoubtedly a great surprise to us. The enemy was composed of farmers,—hardy, excellent shots and riders, but ignorant, unaccustomed to drill and discipline and unacquainted with military tactics, traditions and history. It may seem a bold statement to make; but it appears to me that to their very ignorance of such traditions and methods, their ability to make such a long resistance was due. Unhampered by traditions, they had to evolve their plans of action from their mother wit and they showed undoubted tactical skill in invariably forcing upon us the rôle of attackers: (into the guerilla warfare of the later phases, it would be unnecessary for my purpose to enter). Having done so, they scored their successes by their careful selection of their line of defence, by their skilful entrenchments, their marksmanship and their adaptability to the immediate circumstances of the occasion. This adaptability may be directly attributed to their life-long experience as hunters on the veldt, and to this quality it will be convenient to refer as individuality. Where the Boers failed was in neglecting to make the counter-attacks which on many occasions, when they checked us, would have caused us serious reverses. In a great measure, this failure was due to want on their part of that combination which is the Hall mark of drilled and disciplined troops. The possession of this individuality on the part of the Boers made for success; on the other hand, want of combination militated against their obtaining the full value of their successes.

We, on the other hand, possessed the power of combination which comes from discipline, but our training in peace time had done much to destroy the individuality which modern conditions of warfare call for in addition. Practical experience in the field developed this individuality on our part; but the training was costly. And it is clear that the object to be aimed at to ensure success, by the armies of the future, is to so train their personnel that each man shall work both intelligently as an individual, and at the same time in harmonious concert and combination with his fellow units. In other words, we must train our troops to work, not merely as a machine, controlled by a master engineer, but as a machine, each component of which can work intelligently by itself and yet in unison with the other parts and in obedience also to the will of the chief engineer.

It is difficult to see how such an ideal can ever be reached in its entirety. Our training teaches us the combination and the disciplined control, but kills the individuality: the Boers possess the individuality,

but lack the combination and the control. Pitted against each other disciplined control and combination are bound to win in the end, but the cost is heavy. But if we cannot attain the ideal we aim at, we can, without doubt, do much by a more intelligent system of training than our present one to develop the individuality without too great a loss of disciplined control and combination. Before suggesting any new methods of training our troops with a view to this object, it will be, perhaps, convenient to analyze the origin from which our present day drill,—if not our present day training,—has sprung. Without attempting to dip too deeply into antiquarian research, the tactics of Frederick the Great will probably suffice to exemplify the reason of much of our modern drill and practices.

From Home's "Precis of Modern Tactics" I extract the following description of the methods that Frederick the Great employed in forming his troops in order of battle: "When the army marched to the front in four columns, right in front, it formed line of battle as follows:—The battalions marched in open columns of companies, the cavalry in open column of troops or squadrons. Whilst the advanced guard engaged the enemy and the King examined the ground, the columns wheeled to the right, if right in front, to the left, if left in front, and marched in two long parallel columns seeking to place themselves obliquely on one of the enemy's wings: when the signal was given the two columns halted and wheeled right or left" (left or right?) "into line. The army thus moved in open column of companies along the front of the position occupied by the enemy." "The troops were formed in three ranks, the greatest care being taken to preserve correct distances and alignments so as to enable every man to fire. The movements were always in open column which wheeled into line to the pivot and advanced on the enemy."

In the above extracts we have, in a nutshell, the whole origin and object of our present day battalion drill and of much of our musketry instruction. The changes of front and formation of column, from line, and line, from column, of our modern drill book can only have as their object, close order movements on the field of battle of some such nature as those described above: the arbitrary positions enforced by the firing exercise can only have originated in the necessity for men standing shoulder to shoulder handling their muskets with automatic uniformity so as not to impede each other. Each man, I think, was only allowed a space of two feet in the ranks (it is only of late years it was increased to twenty-seven inches), and with such a confined amount of space it is obvious that the greatest precision, accuracy and uniformity in handling arms were necessary to prevent each man hampering his neighbours.

It is true that Macdonald's Brigade at Omdurman exemplified what close order drill can effect in the field of battle, but the circumstances were exceptional and in the vast majority of cases manœuvring in close order, within rifle shot of the enemy, would mean destruction to the unit so handled.

In the native army the great stumbling-block to proficiency in drill and exercises lies in the constant changes which take place, in musketry especially, but also in drill, handling arms, etc., etc. The changes are in the most cases improvements in themselves, but they are very unsettling: instead of the correct word of command mechanically occurring to a native officer or a non-commissioned officer, he is prone to think of the one he learnt last year, or the year before that, sees that he is losing time, loses his head, blurts out the wrong command, or perhaps a combination of three, gets his company into a state of confusion and spoils the battalion movement. On occasions, such as inspections, movements in the field at a critical moment, or when a man is called on to act quickly, such cases of confusing the drill are very numerous.

At musketry parades, especially at the rapid practices, this is very common. General Ian Hamilton, a year or two ago, reporting on the Musketry of the Army at Home, found fault with the incorrect words of command given by section commanders, but added that he did not find much fault with an incorrect word of command when it was given with confidence and proper emphasis (I believe I quote his meaning correctly, though I do so only from memory). Now the one fault is distinctly the outcome of the other: the mere fact that men are not certain of the words of command that they have to give will infallibly prevent the majority of men from giving them with that decision and precision which is necessary to ensure successful volleys. It is a very simple matter to retain sufficient proficiency in drill and exercises when men have thoroughly learnt *one* drill, but it is a very different matter when men have learnt several different words of command and have had many changes introduced in the methods of handling their arms. Theoretically, of course, troops should always be ready to perform any drill or exercise at a moment's notice, but in practice we know this is not so: so many different kinds of training have to be carried out during the year that long intervals perforce occur between the practice of any particular exercise. Much valuable time is therefore wasted in the months, all too few, available in India for training, by the necessity for special preparation prior to the annual course of musketry and the annual inspection. The Duke of Wellington is credited with having refused to sanction any change in the field exercise of his day, on the grounds that any benefits that might accrue would be more than vitiated by the confusion and want of confidence such changes would cause for several years.

The first step towards giving our troops more practical training in the field must be to give them more practice in the field. This requires more time, and this time must be found, when necessary, by cutting down the hours at present devoted to barrack square drills and exercises. With constant changes to learn, and unlearn, any curtailment of the time devoted to such exercises will result in the falling off of proficiency in them. I think, however, every old soldier will support me when I say that even greater proficiency would be retained with half the time and half the instruction, provided no

changes were introduced and men had only to refresh their memories of what they had once thoroughly learnt and were not confused by having been taught several different methods, the last one of which they have to pick out from their memories of fragments of the others.

Let me then suggest, as a first step towards more advanced practical training, that no changes in drill and, so long as the rifle remains the same, no changes in handling arms, and the firing exercise be made for a period of, say, ten years. Much valuable time would not then be wasted in teaching men new and practically useless changes of detail, and in the still more difficult task of teaching them to forget other methods they had previously learnt.

The drill of by-gone days had, as its object, the training of automata, not the development of individuality: our object must be to combine the mechanical obedience of disciplined troops with the development, to the highest extent possible, of individuality. The perfect combination of these two qualities is, I believe, and as I have said before, an impossibility, but by continuity in the details of drill, so little further practice in it will be necessary to retain sufficient proficiency for all practical purposes that not only will much time be available for practical training, but the men's individuality will not be destroyed by the perpetual grind of the barrack square.

If we frankly ask ourselves the objects of our drill and practices, I am afraid we shall have to confess that the standards by which we judge efficiency are obsolete. Tradition is very strong in our most conservative army, and considering the glorious records of the past, this is not to be wondered at; but the result of tradition is that we aim at mechanical excellence in detail and in so doing lose sight of what is really essential. A few instances will show my meaning. We have all of us seen regiments found fault with in the march past; in one the butts of the rifles were not correctly in line, in another the dressing was not good, in a third the distances between companies were not correctly kept, and yet have we ever seen a regiment march past in such a disorderly manner that it was too much out of hand for any practical movement in the field, or rifles so badly handled that they impeded in any way the movement of the company in any formation? Smartness, in such parade movements, is of course desirable as being indicative of careful training in other respects, but super-excellence at barrack square drill can only mean that much valuable time has been devoted to such exercises, possibly at the expense of more valuable instruction in the field. Smartness, therefore, should be required from a regiment in its ceremonial drill, super-excellence should be deprecated unless a regiment can show it is equally efficient in the field. With our eyes, however, compulsorily fixed on smartness in drill by the requirements of inspecting officers, we are too apt to forget that such smartness is not the end of our training, but only a means to that end, and that too much time given to acquiring such smartness is sacrificing the end to the means.

The object of our physical training is according to the drill book "not display but the setting up of the soldier and the strengthening

and rendering supple of his muscles," and yet, in nine cases out of ten, the physical training of regiments is tested at the annual inspection by making the whole regiment perform the exercises in perfect time to the band. Would not the real results of the training be more practically tested by the inspecting officer selecting, say, half a company, and making the men perform the exercises stripped to the waist?

The adherence to the latest position laid down in the firing exercise that is required by the musketry regulations is also another instance of the object being lost to view. One is tempted to enquire, when one recalls the numerous changes that have taken place in position drill during the past 20 years, whether if each position has been found faulty in its turn, a good deal of time has not been wasted in requiring men to acquire these positions which might have been more usefully employed.

Changes, however, in this direction cannot come from below; they must be introduced from above.

So long as inspections remain annual occasions, so long will commanding officers endeavour to polish and smarten up their battalions in drill and other mechanical exercises to make a favourable appearance on these occasions; and as inspections invariably take place in the cold weather, much valuable time is thus wasted. This is only natural: we all of us love to see a well drilled battalion and the temptation to work up a regiment, so as to be at its best on such an occasion, as an annual inspection is not only great, but, provided it does not interfere with more important instruction, perfectly justifiable. It is only on occasions when it interferes with more practical training that it is to be deprecated. It appears to me that a very sound step towards more practical instruction of our troops would be to abolish inspections altogether as annual occasions and spread the inspection over the whole year: the weekly programme of parades now submitted in most stations in the cold weather being utilized to enable the inspecting officer to inspect whatever instruction was being given or work being done without any warning. Any special exercise that the general desired to see could, of course, be ordered, but only sufficient warning should be given to enable the necessary arrangements to be made and not sufficient to enable the particular exercise to be 'crammed' for the occasion. I think inspections of this nature would be found more satisfactory: they would certainly be a much better test of the real efficiency of a regiment.

TRAINING.

So long as the requirements of warfare could be met by men manœuvring, if not exactly in close order, still close enough together to be moved by word of command, instruction on the barrack square, with an occasional field day, was all that was necessary to make our troops an efficient fighting machine.

Other conditions, however, now prevail, and it is but seldom that our troops are called on to manœuvre in close order in the field. Close order formations are, of course, necessary for the movement of troops when not in immediate contact with the enemy ; but sufficient efficiency in the performance of such movements can easily be attained, with a minimum of training, by any ordinary body of troops which has been through a course of recruits' drill. Our special attention should therefore be given to training the men in such exercises as will make them efficient in the loose order formations necessitated in the field by modern rifle fire, while barrack square drill in all its forms should be relegated to a position of secondary importance.

Now, if we consider the programme of instruction we give our troops during the year, we shall in most cases find that while barrack square drill in one or other of its forms is carried out continuously, practical field training is merely periodical and occasional. To attain proficiency of course in field exercises the relative amount of time devoted to them and to barrack square drill should be exactly reversed ; in other words, practical instruction in the field should be continuous throughout the year, while barrack square exercises should only be occasional or for certain set periods. Unfortunately the climate of India is against this programme being carried out in its entirety ; but I think that much more could be done towards carrying it out than is done at present.

The practical training our troops receive may be conveniently divided into three headings—

1st.—"Field training" for which companies, double companies, or squadrons are struck off duty for a certain period annually.

2nd.—Field days either regimental or brigade.

3rd.—Camps of exercise.

The annual training, if practically carried out, is excellent in every way ; but it has the drawback of occurring only once in each year, and then only occupying a short period. The drawbacks of regimental or brigade field days are that they take place too near cantonments on one or two well known spots, marching out from and returning to cantonments occupies so much time that little time is left for the actual operations, the opposing forces start too close to one another, the cavalry seldom have time for proper reconnaissance and the whole proceedings are too often hustled through in a way that would be impossible under service conditions. One of the most important lessons that the Transvaal war has taught us is that while rapid strategical movements are necessarily required for success, the action itself takes place over a much larger front and depth than formerly, and is infinitely more slowly worked out. Engagements which are hustled through in an hour or so as brigade exercises would under service conditions probably take the whole day if not longer. An air of unreality is thus given to the proceedings which is most harmful in

giving to the junior ranks especially a false idea of what would happen, and what should be done, on active service.

At camps of exercise more time is generally available, and the operations are usually much more realistically carried out. To the staff and senior officers generally camps of exercise are most instructive if well planned; but in one very important point the detached manœuvres of any bodies of troops, sufficiently large to be designated camps of exercise, fail, and that is in giving instruction to the junior ranks, and on the junior ranks, often on the senior privates in temporary command of sections, will the success or otherwise of the operations of the future depend. Theoretically, if a battle is to be scientifically fought out, the commander should be in such communication with each unit of his command that he is able to have a general idea of what is going on in all parts of the field, and should be able to control their movements to a certain extent at any rate. Experience has shown us, on innumerable occasions, that not only has all control vanished, but communication has become so impossible that generals have been entirely unaware of the progress made by considerable bodies of their troops on the flanks, with the result that on more than one occasion the "retire" has been ordered when the position has really been won.

Whether in the future any means will be devised by which communication, and with it control, will be maintained, I cannot say. At present we know that on many occasions it cannot exist, and therefore it is beyond all things important that we should train the junior ranks to think for themselves, and to act for themselves, in accordance with the instructions they have received and in combination with each other. They are the people therefore for whose instruction these camps should be particularly valuable; but, as a matter of fact, they are the people who learn least from a camp of exercise. Generally speaking, a camp of exercise is only instructive to the commanders of the opposing forces and their staffs, and to the commanders and staffs, of the largest units of which each force is composed, and to those individuals who have the good fortune to be present as free lances. For instance, if a couple of divisions were opposed to each other, the major-generals and their staffs, and the brigadiers and their staffs would be in a position to really see what was going on. Commanding officers might possibly learn something, but company officers would see nothing and learn nothing, and the rank and file, except for the benefits of the healthy exercise and the open air, might just as well be in barracks. With opposing forces of the size of a brigade, all mounted officers can see what is being done and a few company officers may be in a position to benefit by the exercises. (I am assuming that these officers take advantage of the freedom of movement blank cartridge permits.) It is only, however, in the independent, or semi-independent, manœuvres of much smaller bodies that the really junior ranks receive any practical instruction, or are, except on the rarest occasions, called on to act on their own initiative or out of leading strings, and one of our principal objects in camps of exercise should be to train these junior ranks.

Another drawback both to regimental and brigade field days, and to camps of exercise, is the difficulty of finding large enough stretches of ground affording suitable physical features for manœuvres and free from crops. Operations in the future must necessarily be fought over very much wider fronts than in the past owing to the power of the defence to hold a longer front, and to the necessity of wide extensions in the attack. Where crops occur men are compelled to advance in single file along the intersecting paths to avoid doing damage. In many cases this is unavoidable, but it teaches men to do in practice what they could not do under fire, and on that account is to be deprecated.

So far my rôle has been to criticize our existing methods, an easier task of course than to suggest others to replace them ; but this I will now attempt to do. The war in the Transvaal has shown us how all-important is the training of individuals and of the smaller unit commanders. Our present system of training seldom calls for the exercise of individuality on the part of the one or the other, and it is obvious that to obtain this training of individuality, we must so change our methods as to constantly exercise the commanders of the smaller units. To do so, it is necessary to place these units in such a position that they will be able to take an intelligent view of what is occurring, and be called on to exercise those qualities of self-reliance and adaptability to circumstances, which will be required of them on active service. When a battalion is exercised, it is but seldom that company commanders can get away from leading strings ; they are directed to perform some particular manœuvre, but in doing so they are restricted by definite instructions, and are but seldom allowed that latitude of command which they must perforce exercise under service conditions where, when once launched to the attack, they can expect to receive no further guidance, instruction or orders from the commander of their battalion.

It appears to me that the best method to give the small units this training is to frankly realize that the days, in which executive control in the field, over any larger body than a company, can exist, have gone by, and that as it is impracticable to command an extended battalion, so it is impossible to instruct an extended battalion and accordingly to give the greater portion of our time to training these small bodies to work by themselves. To do this effectually, I would take as the unit in British regiments the company, in native regiments the double company, and to their commanders I would entrust three quarters or more of the time available for regimental training merely occasionally practising, for the sake of obtaining combination, companies, so trained in battalion and brigade exercises. As a first step to attaining this object, all guards and duties, fatigues, etc., should be found by companies or double companies in succession : this would leave the remaining companies of the battalion more or less intact, and available for several days at a time, for practical instruction.

Later, I propose to make some suggestions regarding duties and regimental and staff employment ; but in the meantime I would

urge the necessity of constantly working companies in the same state as they are when periodically struck off duty for either company training or musketry. It will thus be possible to carry out short periods of musketry or of field training, lasting from two to three days, continually throughout the year so far as the local conditions of the Indian climate permit. The nature of this training, and the amount that can be carried out during the day, will be necessarily determined by the season of the year and the state of the crops. Much less, of course, can be done during the hot weather when exercise of every description must be confined to the morning and evening, but even at that season various musketry practices, night marches, instruction in the selection of positions, the examination of any military features of the ground within 2 or 3 miles of cantonments, military sketching, reconnaissance, advance and rear guards, outposts and judging distance are possible and indeed all such instruction should be given, and practices carried out, as can be done without unduly trying or exhausting the men. This season also can be advantageously utilized for instruction in steady drill on the barrack square, and I should be in favour of confining instruction in barrack square drills and practices entirely to what is officially known as the hot season. The cold weather will thus be available in its entirety for practical instruction in the field, either by companies, the whole regiment or the brigade.

There is, however, one form of training which is vitally necessary for the instruction of rank and file, non-commissioned officers and company officers, and that is the free manœuvring of small bodies of, say, the strength of two companies apiece, with perhaps a field troop of cavalry, opposed to each other at some distance apart, and some distance from cantonments. For this it would be necessary to select a considerable number of small camping grounds dotted about the country over which these small forces would work, and large enough to contain them when bivouacking. Many such spaces are available all over the country. The opposing forces should then be sent out with sealed orders and instructions to open them when they had arrived at points, say, in the one case, 10 miles south of cantonments, in the other 12 miles west of cantonments. With the aid of the field troop of cavalry or, in its absence, the company scouts, these forces would feel for each other, and having come in contact, endeavour to carry out the particular rôle assigned to each. One force might represent a convoy endeavouring to force its way past cantonments to reach a given spot, the other a force detached to intercept it. Operations should be continuous night and day exactly as on field service and last from three to five days, the most convenient camping grounds being made use of. Camps might be attacked at night or baggage captured (although the latter would have to be returned) or night marches might be utilized to "sneak" past the intercepting force. Such manœuvres would throw individual responsibility on the company officers and the forces engaged would be so small that each individual man could see, and take a personal interest in, what was occurring. The war in Burma brought out the resources of subalterns in a way that years and years of the largest camps of

exercise would never have done. Such manœuvres as I suggest would, I think, have the same result. Of course there would be certain difficulties and objections to carrying out such a programme; but I think neither would be insurmountable. For British troops water for drinking and cooking purposes would have to be carried on mules to avoid the risk of typhoid and other diseases. To save carriage some form of *tente d'abri* would have to be devised for the men, but with very little expense the present water-proof sheet might be abolished, and in its place a waterproof canvas sheet, some 7 feet by 16 or 18, substituted, and issued to every three men. A sheet of this size, with the aid of a couple of short sticks and a piece of log-line, would form a serviceable shelter for three men as shown in Figure I.

Troops returning from service should be allowed to retain such articles of their free kit as they have in their possession; the sale of such articles can only produce a very small sum, and the articles would be invaluable, especially to native troops, for such small manœuvres. British troops would learn how to cook for themselves, look after themselves and generally to make themselves comfortable under similar circumstances to those they would be in on active service. With a little common sense no friction need occur with natives and young officers would speedily learn to look after the welfare and comfort of their men in a way they would never learn in cantonments or at camps of exercise where all wants are anticipated by the commanding officer and met by the quartermaster and the commissariat.

Senior or other officers to act as umpires would have to accompany each force or join them about the point of contact. Transport, of course, would be an expense, but the 48 mules that are now attached to each regiment in the Punjab Command during the cold weather should be sufficient to carry all that is necessary without causing any heavy expense to Government. As commanders of small forces of this description, junior officers would speedily learn to take an interest in the manœuvres and to exercise their ingenuity when pitted against each other which I think is more than they generally do at larger camps of exercise where they are merely called on to perform some mechanical duty, the object of which they seldom know and the result of which they never see. I do not anticipate this suggestion of mine will be generally approved. Various reasons will be adduced why junior officers should not be allowed to wander about the country in independent command, I, however, believe that the best way to give a man the sense of responsibility is to place him in a position where he is compelled to exercise his responsibility and in nine cases out of ten he will rise to the occasion. If we can persuade the subaltern to take half the interest in manœuvring his company and in meeting the various responsibilities, independent command of this nature would cause him, that he does in his polo, pigsticking and snipe-shooting, the gain in practical efficiency to the army would be so great that it would well repay a hundred-fold any expense that such manœuvres might cause.

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nature that the time available permits; (5) practice in the construction of hasty cover in the attack.

In Infantry Drill it is very rightly laid down that it is not considered desirable to formulate any normal system of attack. At the same time I think that a rough guide should be formulated for the benefit of the rank and file and junior ranks generally, showing the extensions that are desirable at various distances from the enemy's position and the intervals that should exist between successive lines when under fire under normal conditions. Of course such a table would have to be taken only as a general guide and subject to modification according to the nature of fire experienced and the formation of the ground, but it would be of great assistance to the extremely junior ranks on whom executive command now frequently devolves.

I have pointed out the desirability of employing each company or double company in turn to find all guards, fatigues and duties generally so as to leave the remainder free and intact for these short periods of instruction. Officers and non-commissioned officers should, to as great an extent as possible, be with their companies or sections in this field training; if in hospital or otherwise temporarily unavailable, their places should be taken by those next senior to them in the company or section. Non-commissioned officers should never, except under the rarest circumstances, command sections to which they do not belong. If all the non-commissioned officers of one section were absent, the senior private should command, although the other sections might have their full complement of non-commissioned officers. In the same way, in the absence of the company officers, the senior sergeant should command the company, an officer from another company being detailed, if necessary, to supervise, but not to take active command of the parade.

In this manner the men on whom the command would devolve in the event of casualties in the field would be practised in peace time in the positions they might have to occupy on service. All non-commissioned officers employed in the various regimental and station appointments should be replaced by men holding lance or temporary rank, and all such appointments as provost sergeant, mess sergeant, canteen sergeant, etc., etc., should only be for limited periods and non-commissioned officers holding such appointments should, on completion of their tour, revert to their companies for duty for a period at least equal to that for which they held these appointments.

By pursuing the methods I have suggested the captain of the company or the commander of the double company could always rely on having his company or his double company complete and available for instruction for several days at a time.

There is one difficulty which is likely to occur in the case of native regiments containing a trans-frontier Pathan element. By the orders of the Government of India double companies must, whenever possible, consist of men of the same class, and there is an objection to, if not an order against, forming guards anywhere near the frontier of Pathans alone. It would thus be difficult to carry out double

company training, in the methods I suggest, in native regiments having a Pathan element, but, I think, the advantages to be obtained by such a method of training would be so great that it would be well to modify the regulations regarding the formation of Pathans in double companies and to split them up. Pathans are also so especially fitted for advance and rear guard work in the hills that it seems a pity to work them together in peace time when their peculiar qualifications would often render it desirable to employ them separately, and under different officers, on service.

Another difficulty in the consistent training of native troops is the number of guards and orderlies they have to find. How heavily these guards and station duties interfere with continuous instruction may be inferred from the following figures which I extract from an old note book :—

The station guards are those furnished in turn by one or other of the native regiments in Rawal Pindi—

	Non-commissioned officers.	Men.	
Lieutenant-General's Guard	... 2	9	} Station.
Major-General's Guard ...	... 1	6
Colonel on Staff's Guard ...	... 1	6
Rest Camp Guard	... 1	6	
Commissariat Godown Guard	... 2	12	
Fort Guard 1	3	} Regi- mental.
Rum Godown Guard ...	... 1	3
Regimental Quarter Guard	... 2	15	
Hospital Guard ...	... 1	3
Mess Guard ...	... 1	3
Commanding Officer's Guard	... 1	3	
Total	... 14	69	

To give men so employed 4 nights in bed as required by regulations, these totals must be multiplied by 5, with the result that 70 non-commissioned officers and 345 men are unavailable for any continuous instruction.

At the same place a native regiment has to furnish 26 orderlies (with 1 relief, 52 men) for the staff offices alone. Allowing for men on leave, recruits, instructors, signallers, men in hospital, butt-markers, band and the numerous men employed in various duties, it is generally impracticable to strike more than two companies off duty at a time for any continuous instructions, and at stations where "duties" are heavy, it is often impossible to do so. Training is thus compulsorily limited to short annual periods, and in the hot weather, when men are on leave or furlough, it is extremely difficult to carry out any real programme of instruction. A more systematic use of the post would spare many orderlies and guards, I think, should never be employed where the work could be equally well done by chowkidars. Of course men forming guards are available for parades in the intervals between the days on which they mount guard, but they are not available for any continuous course of instruction or of musketry, and

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it is only by continuous and systematic instruction that we can hope to properly train our men.

My suggestions may therefore be condensed as follows: training should be by companies or double companies and should be continuous throughout the year. To enable this to be done, duties of all sorts should be taken by each unit whether company or double company in turn. Guards and orderlies especially should be cut down to the minimum possible. Every opportunity should be taken to give small forces the opportunity of manœuvring by themselves and opposed to each other for several days at a time.

CAVALRY.

So far my remarks have been made regarding infantry alone; but much that I have said applies to cavalry also. What the rôle of cavalry as a fighting arm, as opposed to a reconnoitring arm will be in the future, I frankly confess I do not know. I can only quote an extract from "Home's Précis of Modern Tactics" of 1873 (page 118): "The action of cavalry on the actual battle field is by no means a thing of the past. The use of cavalry with skill at the right moment and in the right numbers has always been considered one of the most difficult problems in war; modern arms have increased the difficulty manifold, but to say that the day of cavalry in the field of battle is past, is merely another way of saying that the knowledge of how it should be used is wanting." Colonel Maude in one of the Magazines has recently pointed out that the rate of aimed rifle fire has only doubled since the time of the Franco-Prussian war. The stopping power of the modern bullet is certainly not half, probably not a quarter of that of the bullets used at that time, and wider extensions will probably give cavalry increased opportunities for sweeping down on an extended line, but this is merely a matter of supposition. In the Transvaal war our cavalry was never opposed by cavalry, and until we have obtained some actual experience speculation is merely idle. It would be a mistake also to generalize from our recent experience as to whether mounted infantry or cavalry are most useful for scouting purposes. If we suppose the opposing cavalry screens to come in contact, it is undoubted that the side which brings the preponderance of rifle fire to bear will be in the best position to prevent the other side from breaking through the screen; but, on the other hand, we must remember that when it comes to making a dash to penetrate the enemy's screen that that force which fights mounted will have an infinitely greater chance of achieving its object than the one that is compelled to dismount to fight. The suggestion of change in matériel does not come within the scope of this essay, the object of which is merely to suggest training of the personnel. Any suggestions regarding reducing the weight to be carried by the troop-horse would, therefore, be out of place. The points in which our cavalry have shown themselves wanting apart from their mobility are in scouting and in musketry and probably, also, increased training in dismounted duties and the use of the spade would be desirable. I can only suggest continuous instruction on these matters on the same lines

as for infantry with the addition of regular and systematic practice in reconnaissance and scouting on the lines indicated in Baden Powell's "Aids to Scouting." But every cavalry soldier should realize that his first duty is scouting and reconnaissance and, however glorious and magnificent a knee-to-knee charge may be, the opportunity for such exploits comes but seldom while the safety of the army is daily dependent on his proficiency as a scout. Probably some of the time that is given to practising close-order movements might more advantageously be devoted to extended order and more practical work in the field, but in any case proficiency in scouting and reconnaissance is the first thing which should be required of a cavalry regiment.

ARTILLERY.

For artillery I have but one suggestion to make. On some occasions, if not many, our fire appears to have been directed on positions which were not occupied by the enemy, and on one or two occasions noted by an anonymous writer in the *Pioneer*, not only was this fact apparent from a certain distance on the flank, but the true position of the enemy was also visible. It appears to me that an officer detached to a flank some little distance away might often be in a position to see whether the fire of our guns was directed on the proper position and, by signalling or otherwise, be able to communicate the true objective to the officer commanding the artillery. It appears to me also that the addition of a couple of powerful telescopes to each battery would be advantageous; but that is a matter which hardly comes within the scope of this essay as also does the question of the quality of our guns. As regards the manner in which they were handled, I think it is generally conceded by all those competent to give an opinion that our gunners have nothing to learn in that respect.

MOBILITY.

Our greatest enemy in the Transvaal has been the want of mobility of our forces. Much of this want of mobility has been due to the amount of transport we find necessary to accompany us in the field and a great deal to the enormous weight we find incumbent to place on the troop-horse, but these questions hardly come within the scope of this essay. The power of making rapid and long marches is merely dependent on the men being in hard condition and practised in, and accustomed to, carrying their accoutrements, rifles, ammunition, etc. It takes some little time to get men into condition, and it is difficult to get into really hard condition, men who have been in the habit of spending long periods of slothful indolence in barracks such as compulsorily fall to the British soldiers in the plains in the hot weather. Officers can and do keep themselves fit and in hard conditions by means of racquets, polo and other games, but the private has seldom the incentive or the opportunity to follow their example. The vast distances which the Afridi on foot and the Boer on horseback can traverse are well known and are directly attributable to their regular and continuous exercise in the open air. We cannot of course expect to find troops in the same hard condition, at the commencement of

autumn after their long confinement during the hot months, that we find them in after a march or a camp of exercise, but by providing them with regular exercise during the hot weather as I have suggested, by periods of company training, we should undoubtedly find them more fit at the beginning of the cold weather and what is more important, never having been allowed to become thoroughly slack, they would be harder and more enduring men on service. I am not a medical man, but it has always appeared to me that for one life the compulsory detention in barracks saves directly it probably injures the constitution of five or six men. Every incentive should therefore be given to men to take exercise during the hot weather, and Indian clubs, dumb-bells, boxing gloves and Sandow exercisers should be freely supplied to barracks while gymnastic apparatus should be fixed on the shady side of each company block.

The scouts who have been trained in various regiments have shown us what 10 per cent. of a regiment (and that 10 per cent. only selected from among the marksmen and first class shots) can do in the way of rapid and long marches. I know a regiment which can place 80 rifles at any given spot 6 miles distant within an hour in any ordinary country in the plains and which could probably place the same number 15 miles away in three hours. These men are all picked shots, and it is obvious that, by including men who are not necessarily crack shots, a mobile force, some 250 strong, capable of making rapid marches, should be forthcoming from every battalion. For flank and turning movements, which the Transvaal war has shown us, will be necessary in all future attacks; such a mobile force would be invaluable. It is important therefore that all men in a battalion who give promise of being able to move with rapidity and to endure fatigue should be specially trained. Some privileges of course would have to be given them to compensate them for the extra exertion they would have to undergo, but being given an "overslaugh" for every alternate guard and being excused all ordinary fatigues would probably be sufficient. Special badges should of course be given to all men qualified as scouts and rapid marchers.

For the rapid movement of a battalion I would suggest the practice of a form of marching used by Crawford's Light Division in the Peninsula. Three steps in quick time alternating with three steps at a long trot or double; with this bodies of men can be moved at the maximum pace possible with the minimum of distress.

The question of the regulation pace is also one, I think, should, under modern conditions, be reconsidered. For such manœuvres as those I have above mentioned at the time of Frederick the Great, absolute similarity in both length of pace and cadence was necessary, and the pace had, therefore, to be adopted to that of the slowest moving man of the slowest moving battalion. Now-a-days the necessity for such uniformity has vanished, and it is obvious that under many circumstances the most rapid moving battalion would be the most valuable. Why then should we tie down a battalion of, say, Sikhs capable of stepping a pace 33 or 34 inches to a pace of 30 inches to attain which a Gurkha battalion has to extend itself? The

Punjabi naturally walks with a long swing, covering close on 4 miles an hour, why should we not, instead of confining him to the stiff regulation pace, make the regulation pace for him an adaptation of the pace which is most natural for him and at which he can travel at the greatest rate without fatiguing himself? A horse artillery officer remarked to me a few days ago that he had noticed that his men on occasions on which they marched on foot beside infantry invariably marched away from them, and accounted for it by the fact that his men had never been properly trained to march. It is, of course, undesirable to unduly hurry men, but they should be taught to march at the fastest pace at which they can move without distress. If too great latitude were given in this respect, much harm might be done; but it is obvious that the faster our battalions can move, the more efficient they will be. It therefore behoves us to see that the fastest rate of marching is obtained from each battalion that its men, as a whole, are capable of: men, who are slow marchers, being relegated to baggage guards and other employments where they will not delay the pace of the battalion.

ENTRENCHMENTS.

The most noticeable point that the Boer war has brought to notice is the failure of our artillery to do what was expected of it. M. Bloch in "Is war now impossible?" gives the following comparison between the power of artillery of the time of the Franco-Prussian war and of the present day: "In 1870 an ordinary shell when it burst broke into from 19 to 30 pieces; to-day it bursts into 240: shrapnel fire in 1870 only scattered 37 death-dealing missiles; now it scattered 340. A bomb weighing about 70 lbs. thirty years ago would have burst into 42 fragments. To-day when it is charged with peroxylene it breaks up into 1,200 pieces, each of which is hurled with much greater velocity than the larger lumps which were scattered by a gunpowder explosion. It is estimated that such a bomb would effectively destroy all life within 200 metres of the explosion." It is impossible to believe that our guns are perceptibly inferior to those of other nations, and we cannot doubt that our gunners handled them at any rate equally as skilfully as those of any other nation would have done, but actual facts show us that the numbers of killed and wounded our guns accounted for was ridiculously small. On no occasion was this more noticeable than at Paardeberg. There, it is true, the Boers merely entrenched themselves with a view to cover and not defence, but it is a most signal instance of how the skilful use of the spade can defy the most modern and the most efficient artillery. Equal skill on our part would have saved us many a casualty and possibly some surrenders. That instruction and constant practice in the use of the spade is therefore absolutely necessary for the defence is too obvious to require further demonstration. In the attack also Spionkop has shown us how necessary the spade is in securing a position once taken or a line once reached. It is true that at Spionkop the nature of the ground was against entrenchments, but many similar instances will occur in the warfare of the future when by entrenchments alone

will it be possible to hold a position once reached or taken. Instruction and constant practice in the use of the spade are therefore vitally important for our troops and also practice in the selections of suitable situations for the position of trenches. In the future, we now realize, it will be most difficult for an attack to reach a point, so close to the line of defence, that from it an assault can be delivered with any prospect of success. It thus appears that an attack on a position will have in future to be carried out much in the way that hitherto has been deemed necessary for attacking a field work or fortress, namely, by the slow process of sapping; this, of course, will call for both skill and intelligence in the use of the spade from every infantry soldier. It seems probable that every soldier will in future have to wear on his accoutrements an attachment capable of holding either a pick or a shovel, and that picks and shovels for probably half the strength of each battalion will be carried on mules and distributed to the first line as it prepares for the attack. I think we may safely conclude that, so far as our knowledge of metals stands at the present day, it would be impossible to devise any form of entrenching tools that would combine both lightness and strength. I have seen light entrenching tools used on service and in a couple of days, such portions of them as remained, returned to the field park, fit only for scrap-iron and tooth-picks.

I have advocated the continuous working of the soldier; but if he is to obtain any profit from the instruction, it is above all things necessary that he should be interested in what he is called on to do. Aimlessly driving him about the country will only disgust him; but, with tactful handling and intelligent treatment, the soldier will both benefit and profit by his training. Every endeavour should therefore be made to interest him in what is being done, and the officer who can interest him most will be the best instructor.

Men should never be over-worked or allowed to grow stale: on the first signs of either the course of instruction should at once cease and the men be given a few holidays or else an entire change of work.*

MUSKETRY.

The Transvaal war has shown us if, indeed, we could ever have doubted it, that skill in the use of the rifle is of most vital importance in modern warfare; and one of our principal objects in training our men should therefore be to make them thoroughly capable and reliable shots. That this should be the object of our present annual course is too patent to require demonstration, but in many ways the annual course fails in its object. During the Tirah expedition every one was impressed by the skilful shooting of the Afridis, and our long lists of casualties both in Tirah and the Transvaal show that both Afridis and Boers can make the most of their rifles whilst using them

*NOTE.—Want of space has compelled me to omit some remarks on the training of scouts. The subject is a most important one; but so much attention has been given to it during the last few years that I consider it better to devote what space remains to the consideration of other points, perhaps less important in themselves, which have not been so prominently brought to notice.

in the field. During the past 18 or 19 years I have regularly "put through" musketry every class of man that is enlisted in the Punjab Army, and I can safely assert that so far as target practice is concerned, the Afridi is practically no better a shot than the Sikh, the Dogra, or the Punjabi Mohamedan. At Fauresmith, in June last, a team of the Denbighshire Yeomanry fired a match with a picked team of the Jagersfontein Rifle Club, the Yeomanry winning by 20 points. The teams in question may not have been, probably were not, representative, but to judge by the comparative casualties on either side during the war, the shooting of the Boers should have been so infinitely superior that the results should have been exactly reversed.

I account for both of these apparent contradictions by the fact that our whole course of training only tends to make men mechanical shots at known distances; while the Boer and the Afridi have to learn the practical use of their rifles or lose—the one his dinner, the other his life. The real object of our annual course is, as I have said, to teach men to shoot both accurately and intelligently, but this object has, perforce, to be made secondary to the requirements of arbitrary positions, and, still more, has to be subordinated to the various regulations which are necessary to obtain that comparison between the shooting of various corps, which is known as the figure of merit. In by-gone days, when battles were fought in close order, two or even three deep, a regulation position was absolutely necessary to enable men to handle their arms in immediate proximity to each other, and rigid adherence to the exact timing of each movement was necessary in order that the combined fire might be given with precision and rapidity. Muskets, in those days, when battles were fought out at a distance between the forces engaged, of a hundred yards or two, were by no means capable of carrying straight, for even that short distance, and probably the best result the arm was capable of was attained by the mere mechanical levelling of the pieces. Conditions have now altered, fire is opened from much longer ranges, which necessitates much greater attention to elevation; at much smaller objects, which entails much greater attention to aim; men firing cannot now stand, kneel, or even lie down in close order; they must be extended to from 4 to even 10 or 20 paces and take every advantage of cover. Consequently the control of fire has become most difficult, and we must, to a great extent, rely on individual marksmanship to replace the mechanical fire of the past. (I leave for the present the consideration of circumstances, when controlled mass fire may be advantageously employed.) As regards the arbitrary positions required by the firing exercise, a glance at any company of men will show that the different proportions existing between the length of limb and the height and build of different men are so great as to preclude any possibility of any regulation position being fixed in which every man could shoot with the greatest comfort to himself and, therefore, to the best of his capabilities. Nowhere is this more clearly noticeable than at Bisley and Meerut, where, standing especially, our crack marksmen may be seen violating every canon of the regulation position and at the same time piling on bull's-eye after bull's-eye.

The object of the figure of merit is, of course, to obtain a comparison between the shooting of different corps. In this it partially succeeds, but not entirely. To begin with, good and bad ranges make almost a difference of 10 per cent. in collective practices. Some regiments interpret the regulations with greater leniency than others: some officers count a doubtful hit as a ricochet, others would give the same hit as a double hit. Some regiments are deterred from shooting by a wind which would not prevent another regiment from firing. In many ways there are thus factors which influence, to a great extent, the position on the list of different regiments and the figure of merit thus fails in giving that exact comparison between the shooting powers of regiments, that is its only recommendation, if not justification. I should therefore recommend the abolition of the figure of merit; at any rate the discontinuance of its publication; but as it is desirable to, in some way, test the musketry efficiency of regiments, I would suggest the following as a means of doing so without unduly hampering the course of instruction throughout the year. Let the general or officer commanding the station detail certain companies or half companies to fire certain practices either before him, or before a station board composed of senior officers, on a certain day or days; the companies or half companies to be chosen by lot and all men belonging to them present in the station and not in hospital to actually fire. Certain percentages might be allowed for bad weather and other factors that might be considered to affect the shooting, and according to the results obtained the musketry efficiency of the regiment should be graded as excellent, very good, good, fair, indifferent, or bad. The practices to be fired might, if it is considered desirable to obtain absolutely comparative results, be fixed by head-quarters and notified in sufficient time to enable them to be fired in a particular month, but not sufficiently early to enable regiments to specially practice them. The companies or half companies selected to fire should, for the same reason, be given not more than 48 hours' notice.

As a practical test of efficiency, this would, I think, be found more correct than the existing figure of merit.

The present annual course fails to be satisfactory for two reasons—first, with known distances, and conventional and unrealistic targets it is too mechanical to teach practical shooting; and, secondly, it only occupies a short period in each year and is not continuous as it should be throughout the year.

As preliminary instruction, to teach men the alphabet of shooting, the annual course is excellent, and anyone who has learnt to shoot effectively down the range can easily with a little practical practice become a really useful field or game shot, but unfortunately our instruction of the soldier ceases with the completion of his annual course, and instead of giving him any further opportunities of practice under more realistic conditions, we seldom require him to fire another shot until a twelve-month later, when we again call him out to go through the same mechanical course.

In the periodical nature of the course lies a great objection: in no sport or game would any man attempt to attain proficiency by merely

practising it for a fortnight in the year. How then can we expect our soldiers to be really proficient in the use of the rifle when, as a rule, for eleven months in the year they never fire a shot? Elsewhere I have suggested means by which companies can be available complete and intact for several days at a time, all the year round, and companies in this state should be regularly exercised once a month or every two months in both the hot and the cold seasons.

For the purposes of the practical instruction I am about to suggest a much wider range than one of the recognised type would be necessary. In the hills suitable ground could easily be found; in the plains I suggest the following:—At the station in which I am at present there are three parallel ranges, each with stop butts, about 40 yards in length and with intervals, between each stop butt, of about 80 yards. By building up these intervals we should obtain a continuous stop butt some 280 yards in length. On this combined range numerous little pits should be dug at irregular intervals: each pit should contain an iron frame work, on which an iron target showing above the ground a representation of the head and shoulders of a man could be swung as shown in the Figure II.

The size of the head and shoulders might, perhaps, be a little exaggerated. The portion of the target below the axis on which it swings should be a little—but very little—heavier than the upper portion, so that while the target would remain upright until struck, it would, on being hit by a bullet, turn over, and the back being painted white or red, the fact of its having been hit would be immediately apparent. No markers would thus be necessary.

To carry out practice with these figures, the party should be marched to any point on the range from 800 to 300 yards from the stop butt, and each man called out in turn and directed to fire, say, 5 shots at any one of the figures selected by lot and pointed out to him by the officer. The man would thus be unaware of the distance, and the fact of each man's target being decided by lot would prevent him from communicating the range to his comrades when once he had found it. Each man should be required to fire his rounds off within a given time; men who failed to hit the targets allotted to them should be detained for subsequent practice till they did so. To prevent the risk of bullets glancing off and clearing the stop butt, it would be advisable to use some form of bullet which would lose its form and consequently its ranging power on striking the iron target; probably the Dum-Dum bullet would be suitable. It would be necessary to place flags at some little distance from the ends of the stop butt, for safety, no targets outside the line joining the firing point, and these flags being fired at, or better still, no targets should be placed in position outside these lines. A rough diagram, Figure III, will at once show that targets much to the right or left of the party could only be fired at from close to the stop butt, but even at the longer ranges much latitude in the choice of targets at various distances would always be possible. Practice of this nature would render the collection of lead impossible, but the object of musketry is not the collection of spent bullets. A straight stick laid along the ground would show the man

the target at which he had to fire, and a minute glass would be a convenient means of checking the time allowed him to fire his rounds. Any men repeatedly failing at these practices should be sent back to undergo a form of the present recruits or trained soldiers' course. The long stop butt would enable moving practice to be carried out with an increased run, the figures for these moving practices being swung, in the same manner as the targets above described, so as to respond to a hit.

The combined range should be placed at the disposal of each regiment in turn for, say, three weeks, which would give three regiments the opportunity of practising each of their companies for two days every two months or so, the companies being, as I have suggested, at their full strength.

With regular periodical practices of this nature it would merely be necessary to retain a form of the present trained soldiers or recruits' course as a qualifying course and for the further instruction of men who fail repeatedly at the practices.

Although our present system of training fails in turning out really efficient shots, it is quite sufficient to teach the groundwork of shooting to any man who uses his intelligence, and my suggestion of the larger range is only made to force men to use their own intelligence. The reasons which militate against good shooting apart from this question of intelligence are, I think, the following in their order of importance :—

- (1) Want of confidence and nervousness.
- (2) Carelessness.
- (3) Gun shyness.
- (4) Bad eyesight.
- (5) Want of regular practice.

(1) *Want of confidence and nervousness.*

For a man to attain confidence, it is only necessary that he should make one or two successful scores, no matter with what assistance, and he will recognize that the power of shooting is in him, and his subsequent failures will not be due to that cause. Many a man remains a third class shot, year after year, because his first experience, as a recruit, was unsatisfactory, and he has got it into his head that he cannot shoot. I once had the training of an Afridi—an exceptionally large and powerful man : for three years he remained a third class shot in spite of all my endeavours to improve his shooting. The fourth year, before he commenced his annual course, I made him fire with a Quackenbush rifle at a small bull's-eye from a distance of about 25 yards, using an extemporised rest. After a couple of shots, he began to make excellent practice, and, as a result of his newly-gained confidence in his powers, he finished his annual course, a first class shot and became a marksman the following year. Many men fail to become first class shots, merely because they get disheartened if they are not at once successful and have therefore lost confidence in their

powers. Our business should therefore be to make shooting as easy as possible both for our recruits and our indifferent shots. Few sportsmen despise the use of a rest when shooting game in the hills, and certainly no sane man attempts to test a rifle without a rest. For the fighting of the future, when troops must extend and take cover, it will be rare that stones, earth, or bushes, forming natural rests, will not be to hand. Why then should the soldier not make use of them both on active service and on the range? He will certainly shoot the better for their aid, especially on service when excitement will make it difficult for him to keep his rifle steady. All practices should not of course be fired with a rest, but at many it should be permissible. Matters should be made as easy as possible for recruits; this is done in the British course where the recruit commences lying down at his shortest range, but the native recruit, although he commences firing at a shorter distance, has to do so standing; the most difficult position, even for a trained shot.

(2) *Carelessness.*

Carelessness is, I think, in the majority of cases due to want of confidence; by making shooting easy for such men, they will gain confidence and their carelessness vanish. For men who are deliberately careless and will not try to shoot, there is no remedy, but making matters unpleasant for them in the hopes that they will see the error of their ways.

(3) *Gun shyness.*

Gun shyness, if I may so term the fear of the recoil and the explosion, was a fruitful cause of bad shooting in the Native Army when armed with the Martini-Henry. Now that the Lee-Metford is being substituted for that rifle, it is to be hoped it will no longer be a matter worth troubling about.

(4) *Bad eyesight.*

The cure for this of course lies in the wearing of spectacles: such aids to shooting are permitted by the regulations, but I think we should go farther and make their use obligatory for all men whose eyesight is not normal. Surely, if a man is worth retaining in the service, he is worth the cost to Government of a pair of spectacles? All men therefore, whose sight is believed to be indifferent, should be examined by a medical officer, and, if necessary, should be provided with pairs of spectacles at Government expense; for renewals of the glasses a soldier might fairly be charged. We want our soldiers to shoot, not to look at, and it is a short-sighted policy, if I may be excused the expression, to lose the value of a good shot for merely the cost of a pair of glasses.

Sir Redvers Buller has pointed out the extraordinarily keen vision of the Boers as compared with that of our men; this is due mainly to their open air life and the long distances perpetually before their eyes on the veldt. It seems probable that with increasing town life and the absence of the need, or indeed the possibility of looking at distant objects, our eyesight will still further deteriorate. To compensate for this, it is of course imperative that all non-commissioned officers should be provided with binoculars and other means encouraged to provide themselves with them. By giving them as prizes for

athletic sports, etc., they would soon filter through the regiment as men who possessed more than one pair could dispose of the others to their comrades. It would be better of course if binoculars were made part of every man's kit and issued as part of his equipment, but as an absolute minimum, they should be in the possession of every marksman and every non-commissioned officer.

(5) *Want of practice.*

I have pointed out how the present annual course fails in not being sufficiently spread out over the year : my suggestion of making each company fire some practice each month, or every two months, would do much to keep men always proficient in the use of the rifle. Private practices and matches of every description between companies and sections should be encouraged as far as possible : the free grant of rounds for these purposes being increased.

It appears to me also that much could be done towards improving the shooting of the men by the erection in barracks of miniature rifle galleries or ranges. The British Musketry Regulations mention such ranges as being in use at various places at home, though I am unaware of the existence of any in India. The Morris tube used in England appears to be undesirable in India, as it necessitates the use of the service rifle, which, even if unserviceable, is of great value beyond the frontier, and there is always risk of such rifles being stolen, and the Morris tube ammunition also carries too far. For gallery practice I would suggest a plainly constructed rifle of the same weight as the regulation arm, carrying an almost spherical bullet, and taking a solid brass cartridge case capable of being re-loaded, cheaply and easily, regimentally. Men should be encouraged to use these ranges as a pastime, but, except perhaps for recruits, no practice in them should be obligatory. Moving, vanishing and various fancy targets should be provided and matches between individuals, sections and companies encouraged. For the provision of ammunition, beyond the 25 rounds per man allowed free, a certain grant-in-aid should be made and this grant supplemented by additional grants from the canteen and other regimental funds so as to enable any man, who wishes to do so, to practise at very normal expense to himself.

For the sepoy I would suggest a larger free allowance : his small pay precludes his paying much if anything for extra rounds, and regimental funds in most instances are too small to give him much assistance.

Of course such miniature ranges and the provision of ammunition would cost money, but they would give such excellent training of hand and eye that the money would be well spent. Practice on them should be as free from all restriction as possible so as to encourage men to make use of them freely. In the hot months they would be especially valuable to British troops, if conveniently placed near barracks.

RIFLE MEETINGS.

Excellent in many ways as rifle meetings are, they have the drawback of only encouraging the best shots ; their real object should be to encourage all soldiers to improve their shooting. As matters stand, only the crack shots of a battalion can hope to compete at the great

central meetings, and, in many cases, the same regimental teams fire year after year, and to enable them to do so effectively they are struck off duty for months at a time and supplied with unlimited ammunition for practice.

Such concessions can only be made to regimental teams at great expense to rifle club funds and, consequently, very little money is left available for the encouragement of the less capable shots of a regiment. I should therefore be in favour of making the entries for the central rifle meetings more limited, or else so framing the terms that no individual, or member of a team winning a prize of a certain value, could shoot two years in succession in certain competitions and having other competitions, team and individual, open only to men who had never won a prize at a central meeting. Such competitions would afford opportunities and encouragement to many men to improve their shooting. As part of the object of these meetings is to set a high standard of rifle shooting, some of the competitions should remain, as at present, open.

VOLLEYS.

The question of the value of volley firing has recently been a good deal discussed by military men, and the opinion seems gaining ground that what benefit is obtained by the control and the steadying of fire is more than counterbalanced by the loss in individual aim. The question is a difficult one and its discussion would require more space than I have at my disposal, but granting that volleys are the most advantageous form of fire for the defence, it is difficult to see how with wide extensions we are going to use them in the attack. The Germans have introduced what I believe is known as "Grazing Mass Fire" which means that each man fires a certain number of rounds at a named object and then ceases fire and waits for further orders. This form of fire may be an improvement on volley firing, but it has one of its objections, for it is difficult to see how a section commander can indicate to his extended section the objective, and practically command his section as he would in volley firing without unduly exposing himself, and thus drawing the enemy's fire on himself, and, what is more important, on his section.

That volleys will still be useful for the defence, for firing at large objects and for finding the range is, I think, undoubted, but for these purposes they will generally be only practicable or desirable at the longer ranges, and at such ranges therefore should they only be practised: the rounds thus set free being utilized for either individual or combined individual practices.

FIELD FIRING.

Major-General Sir Edmond Elles, in his report on the Attock Manœuvres of 1899, draws attention to the unreality of field firing when carried out by large bodies. The largest body which, to my mind, can be exercised with profit in field firing is a battalion, and the exercise of companies singly appears to me to be much more beneficial.

SUPPLY OF AMMUNITION IN THE FIELD.

The supply of ammunition in the field is a matter on which the Drill Book lays great stress. Personally I have never seen how it could be possible so long as the firing line was forcing its way forward, when once the firing line has obtained a lodgment in such a position that it forces the front line of the defence back and so renders its fire over the ground in rear of it ineffective, the supply of ammunition is then both practicable and easy. But while the successive lines in rear of the firing line are compelled to extend to avoid the enemy's fire, it is difficult to see how fresh ammunition can be supplied to the firing line. With a view, however, to possible favourable features in the ground, the first reserve ammunition should always be brought up as close to the firing line as is practicable with safety. The suggestion of Infantry Drill that "when advisable the carriers will be *led* up to the troops in action by a selected non-commissioned officer" appears thoroughly impracticable and is only equalled by the issue of ammunition bags for the carriers made of *white* canvas.

Our troops should, therefore, be impressed with the fact that in all probability, when launched to the attack, they can only rely on the ammunition they can carry on their persons (say, 250 rounds per man) and must husband it accordingly.

Sir Howard Vincent stated in a lecture recently that when the troops returned to England, the number of men who had been repeatedly in action without seeing a single Boer would be found to be surprisingly great, and this invisibility of the enemy has been noticeable in all the accounts of the earlier actions of the campaign. At what then did our men fire off their cartridges? Of course there are many occasions on which this fire at the supposed position of the invisible enemy is necessary such as to support or divert the enemy's attention from the advance of a neighbouring unit, and still more so at the final *rafale* preceding the assault, though in the latter case the position of the enemy's trenches at any rate would be clearly visible. But with these exceptions our men should be taught to carefully husband their ammunition and only fire carefully aimed shots at either a visible enemy or trench or at places they have reasonable grounds to suppose are actually occupied by the enemy, but in all these cases every shot should be carefully aimed.

A staff officer for musketry recently remarked to me that fire discipline had so wonderfully improved that firing, in all well trained regiments, could always be stopped instantaneously by the sound of the whistle. Admitting this to be correct, we have still to learn how to control the rapidity of fire by the whistle, and it is this rapidity of fire, in most cases unaimed, which exhausts the ammunition, and to the exhausted ammunition many of our surrenders were directly due. In by-gone days when ammunition was exhausted our troops were generally close enough to the enemy to resort to the bayonet, but the intervening zone is now generally too wide and the accuracy and rapidity of modern rifle fire too great to render this last resource possible. The necessity for careful shooting and for husbanding his ammunition cannot, therefore, be too strongly impressed on the soldier.

DISMOUNTED CAVALRY FIRE.

BY MAJOR I. EARDLEY-WILMOT, 18TH BENGAL LANCERS.

This article was not written with the intention of propounding any new and startling theories on the use and abuse of rifle fire by dismounted cavalry, nor is the re-ventilation of ancient ideas on that subject its primary motive.

Its chief object is to act as a plea for the adoption for cavalry of a smaller "fire unit" than the troop.

There are four troops in a squadron and the maximum strength of a troop is 23 men and an officer. This must not be confused with a "troop" for line or range purposes which may be anything up to about 38 men. Throughout the article only the first mentioned field troop is referred to.

The usual method, when employing dismounted fire, is for every 4th man to remain mounted to hold the horses of the others. So the maximum number of men available from each troop is 17 and the minimum is 9, but for the purposes of the article the maximum is assumed.

Therefore when the Musketry Regulations lay down that "the troop is to be considered the fire unit," it means that there is nothing between the independent fire of the individual man and the volleys or collective independent fire of 17 men. In other words, as in the infantry, the section or sub-section is the smallest unit, so in the cavalry the smallest recognised unit is the troop of 17 men. This would seem to be far too large a unit for general use, and there must be many occasions on which a smaller unit of, say, 5 or 6 men would be more advantageously employed.

It seems to be the fashion now-a-days when writing on any military subject to bring in something about "Lessons from the Boer War." In this case there is not much to learn on our particular subject, but it would be as well to briefly summarise what effect military critics seem to think the war, with its long range rifles and smokeless powder, is likely to have on the rôle of cavalry in the future.

Some critics say that the day of cavalry is over and that they should either be done away with or turned into mounted infantry.

The cavalryman has a long and varied list of "parlour tricks." In the old days wearing very tight breeches and charging with the *arme blanche* headed the list and low down, very low down, came dismounted fire and reconnaissance.

The real truth is that cavalry are just as useful and necessary now as then. The only thing is that the order of merit, in which he himself places the various parlour tricks, does not correspond with that held by the military critics. In other words, the list should be reversed. Reconnaissance and dismounted fire should take the highest place and "charging," though useful, should cease to be considered of primary importance.

With this idea in view, the next thing to consider is how the leading rôle, with which we are now concerned, *viz.*, dismounted fire, is best carried out and to what extent the field troop as a unit facilitates its performance?

The chief or, at all events, the most frequently employed rôle of cavalry is reconnaissance, offensive or defensive, *i.e.*, the obtaining of information of the enemy's forces, or the preventing of his obtaining information of yours. Under this latter heading may be included cases where cavalry hold positions either to cover the retirement of their own infantry or to hold them until they come up.

Needless to remark, this can only be done by means of dismounted fire.

Military critics are unanimous in thinking that the introduction of long range rifles and smokeless powder has very greatly increased the difficulties of reconnoitring. Patrols cannot get so close up as they used to owing to the accuracy of the long range weapons, and the smokeless powder prevents them from finding out exactly where the fire comes from and how many rifles are being employed; and last, but not least, it is nearly impossible to tell if a position is held by infantry or dismounted cavalry. This is a most important feature to which reference will again be made later on.

We can now bring in the regulation "Lesson from the Boer War" which in this case seems to be that, in the attack at any rate, the men must be at least 3 yards apart, and probably a good deal more.

The Tirah campaign again taught one that the best way to retire from a position was to do so by dribblets, straight to the new position in rear and not for the whole firing line to retire together 30 yards at a time.

Lastly, reconnoitring is entirely carried out by means of patrols, which are usually 4 to 8 men under a non-commissioned officer or else a troop under an officer.

Before proceeding further, I would remind my readers that a troop consists of 3 sections, and a section consists of 4 front rank men and their rear rank men, which latter quantity is very fluctuating and may be 4, 3, 2, 1 or even *nil*. Each troop has a non-commissioned officer on each flank and one in the centre. So each section consists of 4 to 8 men, including a non-commissioned officer. These complete little sections are usually told off whenever a small body is required as patrols, or as cavalry orderlies with the main body, or small escort, etc. In other words, the section with its non-commissioned officer is a recognised unit in the cavalry.

The points noted in the preceding paragraphs indicate roughly the lines on which cavalry will in the future work ; it now remains to show whether or no the organisation of troops as fire units is satisfactory.

As before stated, a large interval between files seems to be a *sine quâ non* in the open, as a matter of safety ; and in the hills, when seeking cover from rock to rock, as a matter of necessity.

How then is a troop leader going to control and direct the fire of 17 men who are occupying at the least 50 yards of front ? It is recognised that the task is an impossible one, and the inclination now-a-days seems to be to try and substitute a line of well drilled, well trained sharp-shooters, all taught to work independently. Granted that this theory is sound, yet the man who has been taught to do little else than to adjust his sight as ordered and to fire in a company volley can hardly be expected to suddenly develop the "field instincts" of the ideal sharp-shooter.

The only way to arrive at this perfection is to gradually reduce the fire unit until it comes down to the individual man. The troop then would seem to be too large, and it had better be reduced to at least a half. It has been shown that the division of the troop into 3 sections is already recognised in cavalry drill. At first sight a section of 4 to 8 men, including a non-commissioned officer, might seem a trifle small, but it has several points in its favour—

- (a) It is better to employ a recognised division than to invent one for musketry purposes only, as, for example, the halftroop.
- (b) If the sections are too small or undesirable, it is quite easy to amalgamate them into a troop.
- (c) On the other hand, if a troop is too large, it is impossible to sub-divide it into sections unless the non-commissioned officers and men have been previously trained to it.

Should a troop leader wish to detach a few men to hold a small position, or should he wish to retire by dribblets, he cannot do it, as he can have no confidence in a lot of untrained sowars and section commanders. Dafedars he certainly will have, but, unless they have been previously taught, they will be useless : and as long as the authorities look on the troop as the unit and *ipso facto* the native officer as its leader, so long will the non-commissioned officers remain useless. Musketry is not a popular form of amusement in native cavalry, and there are so many other things to do that they are certainly *con amore* not going out of their way to teach all their non-commissioned officers to command troops. Regiments will think that they have almost more than done their duty when they have taught their legitimate troop leaders, the native officers. It is not hard to imagine what will happen when on service some of the native officers get knocked over, therefore it is most necessary that the section should be recognised as the fire unit, as this is the only method by which the authorities can ensure the proper training of the non-commissioned officers, and, moreover, it is the only way by which the non-commissioned officers are ever likely to get any practice.

The real truth is, if one may judge from the Drill Book, the cavalry authorities themselves do not take musketry very seriously, and this cue is only too willingly taken up by commanding officers of regiments. It is even reflected in the Native Army Musketry Regulations (paragraph 224):

"Havildars should not fire with their section and when not commanding, a section will assist in superintending: the duties of such supernumerary non-commissioned officers are only second in importance to those of the section commander, as they alone are in a position to see that the men understand and act upon the orders given them." These are most excellent instructions for the infantry havildar, but the paragraph goes on to say—"Dafedars not commanding a troop will fall in and fire."

The logical question that arises is—why, if supervision is of such importance in the infantry, does it cease to be of any value or necessity in cavalry? It may also be remarked *en passant* that under normal conditions Dafedars never do command a troop.

It is true the $\frac{1}{2}$ squadron has 8 dafedars (but no naicks) to the company's 5 havildars, but surely 1 dafedar might be left out to supervise, as a troop and a section are about the same size. The fact that the troop is so small is the chief reason advanced for not further breaking it up into 3 sections. It is argued that if it is necessary to split cavalry up into groups of 4 to 8 men, then the same applies to infantry.

But it does not! and herein lies another "Lesson from the War," which is a point in favour of the section system.

The war has taught us that the power of the rifle in the defence has enormously increased; that smokeless powder has rendered it very hard to judge of the numbers of the defence and even of his position; also that the cavalry carbine is practically as good as the infantry weapon. This being the case, it may be assumed that the possibilities and the value of dismounted fire by cavalry has enormously increased.

But first let us consider what are the chief characteristics of the rôle of dismounted cavalry as compared to infantry. Briefly, they are of the sheep in wolf's clothing order—a question of bluff and brag, with one cavalry man trying to palm himself off as 5 infantry men.

Imagine yourself on advanced guard or patrol and finding yourself under the fire of a long range weapon using smokeless powder. You wonder if it is infantry or cavalry. You get as near as his accurate weapon will allow, but you can see nothing; you think it must be held by strong parties of infantry, as the fire seems to come from a very extended front. In the meantime your general officer commanding is most anxious to push on, and all this means delay, uncertainty, doubt. Eventually a strong force is deployed and the enemy are driven out of their position. It is then discovered that it was only the cavalry "sheep" disguising himself as an infantry "wolf" by firing from all over the place by little detached parties of sections.

But if the troop is to be the fire unit, they could only fire from one place and the enemy would soon discover that it was only cavalry "sheep" and would at once set about turning it into "mutton" without the delay and uncertainty which the cavalry "lambs," *i.e.*, sections, caused them.

A propos of this game of brag, it would greatly facilitate matters if native cavalry wore khaki lungis, as at present the blue one quite "gives them away."

On ordinary reconnaissances the patrol is usually a section. Here again they might do a lot of good by saving themselves or driving off the enemy by means of dismounted fire, and that fire would be greatly increased in value if in every patrol there was a thoroughly well trained section commander.

"Little and good" is the maxim for cavalry fire, and as the numbers are small, it must be counterbalanced by seeing that the fire tactics, fire control and fire discipline of the smallest unit, *i.e.*, the section, is as perfect as possible.

It has been argued that having a section commander to every 4 or 5 men is a waste of rifle power, and that he had better fall in and fire, but rapidity of fire or a great volume of fire is not the cavalryman's rôle. In his game of brag the 3 bullets dropped round the advanced guard has exactly the same effect as a dozen.

When an engagement is pending the general officer commanding has first to decide how many men per yard he should use, *i.e.*, is the fire, at any given spot, to be "decisive or only preparatory and containing"? If the former, then the more rifles the better; if the latter, then you want fewer men and greater extension to reduce the casualties.

The cavalry rôle is almost invariably "containing," therefore the small sections under their own section commanders seem to be the ideal unit for cavalry and not the cumbersome troop with its unnecessary number of rifles and consequent large expenditure of ammunition.

The 12 well controlled sections of a squadron would give far better result than 4 troops and would probably expend about half the amount of ammunition which is in itself an important point, as advanced cavalry have no reserve ammunition to fall back on.

Finally, the disadvantages of the section system are practically *nil*, because the sections can always be amalgamated into a troop as before. On the other hand, the disadvantages of the troop unit are--(a) usually too big and extended for proper control, (b) inability to detach small parties, (c) want of training among the non-commissioned officers, (d) not such strict fire control, (e) larger expenditure of ammunition, (f) inferior fire tactics, as the men are cramped up in one spot.

THE PRACTICAL TRAINING OF BRITISH AND NATIVE TROOPS IN INDIA WITH REFERENCE TO THE LESSONS OF THE WAR IN SOUTH AFRICA.

BY CAPTAIN W. B. JAMES, 2ND BENGAL LANCERS.

Motto: "Flecte viam velis."

The conditions and circumstances under which the recent war was conducted were so peculiar and unusual that it is necessary to be very careful not to generalise too freely as to the requirements apparently brought to light by our experiences during the operations, and to proceed with great caution to avoid dogmatising on the tactical lessons of the campaign. There is no doubt that, in order to obtain the best results, the lessons connected with organisation and equipment must be read and considered concurrently with those of strategy, tactics and general training.

So many causes affect the training of troops that it is doubtful what latitude a writer on this subject may be allowed. Troops are trained by officers and officers are moulded by a system. We may begin by allowing that our various drill books and regulations are, as far as they go, all that they should be. We fail in the practical application of our theoretical instruction and the cause of this failure is want of practice. But apart from the actual technical instruction of troops, there are other causes which affect their training.

The actual lessons brought to light by this war will be enumerated in the succeeding pages. When, however, we attempt to grasp any one of these lessons with a view to applying it to practical use, we are forced to admit that there is nothing absolutely new, nothing that has not been foreshadowed in some form or other, nothing that is not born of our entire military system.

It is impossible, therefore, to arrive at any correct and logical solution of the problem—the efficient practical training of our troops—unless we consider some of the causes which are more closely connected with the lessons by which we desire to profit. These causes are so interwoven with the so called lessons of the war that it is difficult to separate them.

Before proceeding with a discussion of a system of training, it is essential to thoroughly understand the term "Troops". It must be assumed that the term includes all ranks. It will, therefore, be necessary to consider the training of officers as well as that of the rank and file. Without well trained, capable and efficient officers, we cannot expect well trained and reliable men.

The following statement of requirements will, therefore, be readily understood.

The following may be classified as "Major Headings" to be sub-divided as required when considering each in detail:—

1. The training of our General Officers.
2. The training of our Staff Officers.
3. The training of our Regimental Officers.
4. The training of our men, British and Native.

I. THE TRAINING OF OUR GENERAL OFFICERS.

It would be out of place in a paper of this description to discuss the lessons to be learnt from the actions of General Officers in the late war—more especially as individual characteristics form such a large proportion of the ingredients which combine to constitute a successful or an unsuccessful commander. This heading, therefore, would at first sight appear to be superfluous and erroneous, for it is not so much the training of our General Officers which has to be considered as the system under which they work.

It is this system which has a very great and direct influence on the training of the troops under their command.

It is a lamentable but well known fact that the excess of office work and clerical labour has a very prejudicial and detrimental effect on the practical instruction of our army in those martial exercises which are required to fashion it into a perfect fighting machine.

Committees have assembled from time to time with a view of reducing this office work within reasonable bounds, but the results of their labours have, so far, been unsatisfactory.

Let us consider how this excess of clerical labour affects the question under discussion.

A General commanding a district in India has under his command at his head-quarter station, from four to eight units, while distributed in the other stations of the district are from two to twelve units. Thus, in the larger districts, from twenty to twenty-four units are quartered. How often does the General see each of these units? Certainly not more than twice a year on an average. It is hardly his fault. The strict limitation imposed on him, by climatic and other influences, as to the period during which the formal inspections can take place, and the paucity of time at his disposal owing to clerical work, cause this unsatisfactory state of things. He cannot possibly acquire the necessary knowledge of all the officers serving under him. How is this to be remedied? By abolishing formal inspections which are usually advertised weeks in advance, and by making it imperative for the General to pay more or less surprise visits to every unit or station in his command at least three times a year.

It is unnecessary to enter into any discussion as to the possibility of reducing office work beyond stating that (1) some system of re-duplicating letters and returns should be established; and (2) that all

unnecessary returns should be abolished. We constantly see telegrams calling for officers qualified in some particular subject when a glance at the periodical returns, which thus appear to be superfluous, would have supplied the required information.

As regards inspection reports and returns, it is needless to dilate on the enormous amount of labour which they entail to all concerned in their preparation and revision from the Commanding Officer and Adjutant to the District and Command Staffs. It is, of course, vastly important that the highest authorities should be in possession of the opinions of successive Generals as to the merits of all regiments, and of the opinions of successive Commanding Officers and Generals on each individual officer; but the form in which these opinions are expressed might be greatly simplified.

In the case of regiments we desire to know whether they are fit for active service. There are, undoubtedly, certain accurate returns required for the compilation of statistics, but apart from these, a general statement as to the fitness or otherwise, with an enumeration of those points only which constitute the unfitness, seems to be all that is necessary. In the same manner, a list of all the officers composing a unit, with negative or unsatisfactory remarks on those only who require them, will serve a much better purpose than the string of stereotyped replies to questions concerning the qualifications of every officer on the present triplicated forms. Officers of exceptional merit should, of course, be mentioned, and Commanding Officers and Generals should be in possession of a list of "points," and any officer showing a marked superiority in, or a lack of, any particular qualification should be brought to notice.

Some such system as this, thus roughly sketched, will give Generals more leisure to move about their commands and to study practically the characteristics of each unit and officer.

But, it may be asked, what has all this to do with the practical training of troops? It bears very directly on the question, since officers overburdened with clerical work cannot devote the amount of time and energy required for the training of men.

2. THE TRAINING OF OUR STAFF OFFICERS.

What has been written above with regard to General Officers applies with equal force to Staff Officers. Assuming that every aspirant for staff employment is possessed of his fair share of commonsense and knows his work, the three great *desiderata* are Tact, Method and Forethought. Method and Forethought can generally be acquired, but Tact seldom.

In India every officer, who has not passed through the Staff College, before being accepted as a candidate for staff employment should be sent for a period of at least two months to each of the branches of the service other than his own at a head-quarter station, with a month or more at the district head-quarter office, the total

period being reckoned as two months' privilege leave in order to prevent unfairness to the other officers of the regiment. The Commanding Officers under whom he serves should be held responsible for his application to his work and should be required to submit most full and careful reports as to his qualifications.

Staff Officers should be granted increased facilities for actual staff work in the field and should have opportunities for taking part in frequent Staff Rides. While on the subject of Staff Rides, it will be well to state that they should be of two distinct classes: one class for purely staff work by Staff Officers and candidates for staff employment, and another class, called Tactical Staff Rides, for more or less purely tactical exercises by senior officers aspiring to commands in the field, and for the training of junior officers in troop leading.

In Tactical Staff Rides it is of the utmost importance that the work should be carried out exactly as it would be on service; for example (1):—Orders necessitated by the receipt of reports from the imaginary advanced cavalry (*i.e.*, reports which are the stages by which the Special Idea is built up) should be written and handed in at once. If the issue of orders be delayed until the arrival in camp and the receipt of the Special Idea in its entirety, the exercise will degenerate into a mere examination and will fail to bring out the importance of rapid decision in the field. (2) The Officers Commanding the various units should ride, as far as possible, over the same ground that would actually be traversed by their units, and orders should be transmitted to them by mounted orderlies or by signalling. (3) In all Staff Rides reconnaissances of positions should be carried out under difficulties and conditions approximating those prevailing in war. In making sketches officers should never be allowed to approach a position nearer than would be possible in the face of an actual enemy. (4) It is most necessary that all orders written and issued in the field should be carefully preserved and handed in. There is no more important branch of staff training and duty than the issue of orders in the field as regards substance, style, neatness and caligraphy, and it is only by continuous practice and by the knowledge that each order will be subjected to thorough scrutiny that officers will acquire the art.

As soon as a Staff Ride is ordered and the officers have been detailed, the General Idea, together with a map of the country over which the operations are to take place, should be issued to each officer. They will thus have time, before assembling, to study the general nature of the ground and to think out for themselves any possible operations on the part of the enemy and the probable combinations of their own forces, and will reach the rendezvous with their interest awakened as to the subsequent proceedings and with some conception of requirements. No officer, however junior, ever proceeds on a campaign without some general knowledge of its salient points and of what lies before him.

All this, however, means a considerable expenditure of time on the part of the General and his staff which must be compensated for by a corresponding reduction in office work.

The subject of Field Days will be considered under Heading 4.

3. THE TRAINING OF OUR REGIMENTAL OFFICERS.

At the very outset a consideration of this question encroaches on extremely difficult and dangerous ground and opens up a vast field of thought. It is, without doubt, the most important, the most momentous and the most intricate phase in the stupendous problem now requiring solution.

It is impossible to proceed to the discussion of the actual technical training of our officers without first propounding a simple question and supplying the answer in as brief and concise a form as possible. In what spirit do the majority of our young officers enter our army? The majority embark on their profession in blissful anticipation of enjoying a lively, amusing, free and happy life; filled to be sure, with a certain kind of martial ardour and imbued with a longing for adventure and for the excitement of active service. But how few fully realise the enormous and grave responsibilities that they have undertaken or appreciate in the slightest degree the real, definite and imperious requirements of a service which is their pride and boast! They are hardly to blame. The fault lies in their education and bringing up and in the small amount of encouragement in the true direction which they receive.

But all this lies far too deep to be more than merely touched upon here. We must, therefore, proceed to a consideration of a system of practical training which, while not immediately eradicating the root of the evil, may possibly tend slowly but surely to eat it away.

During the first few years of a young officer's career from two to four hours, according to whichever branch of the service he belongs, represent the amount of time which he spends daily in the actual duties of his profession. It is needless to enter into particulars as to the manner in which the majority pass the remainder of the day.

Let us see how this state of things can be improved, if not by ordinary encouragement and example, then by stringent regulations—

(a) *Musketry*.—A thorough system of musketry will be worked out under Heading 4, so it is merely necessary to state here that every officer, of the infantry at least, should be supplied by Government with a short light rifle or carbine, and should not only be required to execute all the practices laid down for the men, but to thoroughly perfect himself in the use of the weapon.

(b) *Revolver shooting*.—Some hold that the revolver is useless and that it should be abolished. In a large percentage of hands under present circumstances it certainly is a practically useless weapon; but that is not the fault of the weapon; it is the lack of proper training and practice which makes it so. There have, perhaps, not been many occasions during the late war when officers have been compelled to use their revolvers, but

opportunities may and will arise when officers, whose lives are invaluable to the state, should be in a position to effectively defend them. However, the retention of the revolver as a military weapon is only permissible if a certain fixed standard of proficiency in its use is attainable. If this standard is not attainable, the revolver should be abolished. The following course, therefore, is suggested merely because the revolver still forms part of every officer's equipment.

Much more ammunition should be allowed for this practice, and every officer should fire from twelve to twenty-four rounds every month throughout the year.

The present absurd targets should be abolished, and all firing should be done at khaki life-like figures of various sizes, from a head to full sized bodies. These should be both stationary and moving. The moving targets should cross the firer to right and left and should advance towards him and retreat from him at rapid paces. Vanishing targets should also be provided. The full sized figures might, with advantage, be divided into sections, *viz.*—(1) Head and neck. (2) Trunk, sub-divided into four—(a) Right upper. (b) Left upper. (c) Right lower. (d) Left lower. (3) Right arm (bent). (4) Left arm (bent). (5) and (6) Legs above knees. (7) and (8) Legs below knees; and the firer should be obliged to name his shot before firing. The distances should vary from twenty to fifty yards. The above will provide not only instructive but fascinating exercises.

Officers should be required to provide themselves with the best weapon obtainable. The present service Webley Revolver, though a good serviceable weapon, is a somewhat clumsy tool for the fine art of revolver shooting; and the butt, for the majority of hands, is too small and short, and the recoil is excessive.

(c) *Languages.*—Every officer, of whatever branch of the army, serving in this country, should be obliged to pass a purely colloquial examination in Hindustani within a year or eighteen months of his arrival. Many cases have occurred of officers falling into serious difficulties and making ridiculous mistakes on manœuvres through an absolute ignorance of the principal language of the country in which they had spent several years, and it is scarcely too much to ask that all officers should be able to make their way across country and intelligently interrogate the natives on simple matters connected with the possibilities of the district from a tactical, topographical or commissariat point of view.

(d) *Physical training.*—Most of our young officers in this country keep themselves fairly fit and in good training by out-door sports and exercises—those who do not sooner or later feel the effects of the climate and degenerate—so it is unnecessary to say anything on this head beyond stating that it should be strongly impressed on all officers that they cannot expect to be able to lead their men unless they themselves are sound in wind and limb and can show the way over any obstacles or up a steep hill-side. The cultivation of the senses of vision and hearing and of the power of observation should

be encouraged. "Aids to Scouting" by Major-General Baden Powell is strongly recommended to all junior officers.

We will now briefly consider how the spare time—for there is much of it—of the junior officers of all branches can be profitably and practically employed. Officers of mounted corps should be required to make periodical expeditions for considerable distances into the country surrounding the stations in which they are quartered, taking with them a few men. Different men should be taken on each occasion. They should move entirely under service conditions and should sketch and report on the country passed through. Schemes should be prepared detailing a few imaginary incidents to occur at different points during the expedition and the officer should write down on the spot his plans for overcoming obstacles, gaining information in the face of opposition, eluding observation, provisioning himself and his men and horses, holding a post and so forth. He might also be required to prepare a rough scheme for attacking, with a small mixed force, an enemy in a certain position; for passing a river or a defile, or for fighting a rear guard action. All reports should be written before returning to cantonments and should be handed in immediately on arrival. The commanding officer should appoint an early day for assembling all the officers of the unit, as well as the non-commissioned officers and men composing the patrol, and the officer in command of the latter should be required to explain his dispositions and actions with the aid of his reports, notes and sketches which should be returned to him. A discussion should follow, and all officers should be invited to state their views. This system will afford valuable practice to those taking part and will be instructive and interesting to all.

Officers of the infantry might very easily take part in similar exercises, as every officer in India possesses one or more ponies or a bicycle, and a little encouragement in the way of travelling or mileage allowance is all that is required.

In the cavalry the chart and compass practice and the long reconnaissance are admirable exercises if properly carried out, but they only take place once a year, and even then, unfortunately, are sometimes performed in a perfunctory manner owing to the presence of crops and other causes. It is certainly laid down that squadrons are to be exercised in these practices during squadron training; but what we really require is constant practice, and this can only be obtained by the strictest adherence to some such system as that mentioned above. The so-called drill season is not the only time when such exercises can be undertaken with profit; nor is the country, at that period covered with standing crops, best suited for that purpose. A day or so in the open away from cantonments during the hot weather would be beneficial to both men and horses.

Another point on which great stress is laid in the drill books, but which is not sufficiently attended to in practice, is the writing of reports in the field by junior officers and patrol commanders. To quote briefly a very typical instance illustrating the extraordinary disparity in the apprehension of requirements by different officers, a

small body of troops was on outpost duty, divided into two sections. The officers commanding the sections furnished the officer commanding the outposts with reports, but, whereas the report which arrived first was thoroughly concise, though comprehensive and complete in every detail, with the names of places, etc., hand-printed, and accompanied by a useful sketch; the other, which came from no greater distance, was scarcely intelligible, and most of the names of places were undecipherable. The officers were of about the same standing, of similar general ability, and had enjoyed equal advantages or disadvantages in the matter of training; but, while one had utilized his own powers of thought to the attainment of a full appreciation of requirements, meagre encouragement, feeble example and insufficient practice had failed to awaken this sense in the other. This can only be rectified by constant practice, no amount of reading will be of any avail: and regular periodical classes and practical examinations on this and kindred subjects should be held in all units.

The verbal war game as practised in the German Army might with advantage form part of the training of all regimental officers, especially during the rainy season when out-door work is impossible.

4. THE TRAINING OF OUR MEN.

The late war has been productive of many lessons. This is not to be wondered at when we consider that it is the first campaign on a large scale which has been undertaken by any nation since the introduction of the magazine rifle with its flat trajectory and long range; machine, quick-firing and long range guns and smokeless powder. It has taught us—

- (1) The extraordinary value of mobility.
- (2) The need for a reduction of the weight carried by horses and for a more practical horsemastership.
- (3) The impregnability to frontal attack of positions held by a mobile and stubborn force armed with modern weapons of precision.
- (4) The necessity for teaching all ranks the value of cover.
- (5) The importance of earthworks and the preparation of defensive positions.
- (6) The value of entrenchments on the offensive in holding captured positions.
- (7) The necessity for wide extensions both in attack and defence.

It has also emphasised the need for a higher and more intelligent training of our troops in all detached duties, and the fuller appreciation by all ranks of the absolute necessity for constant military precautions and never failing vigilance.

It also points to an improved system of practical training in musketry.

Let us, therefore, first enumerate the requirements necessitated by these lessons and then proceed to a consideration of each in detail--

- (a) Practical Musketry.
- (b) Physical Training.
- (c) Marching.
- (d) Drill.
- (e) Detached Duties, Outposts, Scouting.
- (f) Field Days and Manœuvres.

(a) *Practical Musketry*.—One of the greatest disadvantages under which we labour is that almost all the items of our training are regarded as the end and not, as they should be, as only the means to the end. Our present system of musketry is a case in point. Our men are put through a stereotyped course of musketry as rapidly as possible once every year, and expend a certain number of rounds at known distances from exposed positions which would be untenable on service and at targets which bear absolutely no resemblance to objects at which they would have to fire in actual warfare.

The sound of fire-arms should be as familiar to every soldier as the dinner call. Every man, when he has learnt the use of his weapon and has passed his recruit's course, which should remain much as at present, should, in all his future and constant practice with his rifle, be so trained that the adoption of positions required on service in the face of an enemy will become second nature to him. The conditions under which he fires should as nearly approach those of the field of battle as is possible in peace time.

Space is not available for entering into a detailed description of a course of musketry training, but a few of the more important suggestions may be briefly stated--

- (1) Squadrons and double companies should be struck off duty for musketry and training for one week once a month all the year round, instead of, as at present, for twenty working days for company and squadron training and a fortnight or so for musketry.
- (2) Two or three mornings of each week should be devoted to musketry.
- (3) The targets should be life-like khaki coloured figures of various sizes, say, four, *viz.*—(a) Full length. (b) Head and trunk. (c) Head and shoulders. (d) Head. Hits on the heads and trunks might count more than hits on the legs and arms, or, the heads of the first two targets might be coloured white or black and the trunks divided by circles into bull's-eyes, centres and outers.
- (4) There should be no marked distances on the range.
- (5) There should be no firing points.
- (6) Artificial cover should be provided on all ranges at several points and its position should be frequently altered.

- (7) The centre marker's butt should be abolished.
- (8) The stop butt should be lengthened to such an extent as will admit of at least fifteen single life sized targets being placed in line between the markers' butts at intervals of six to ten feet.
- (9) The stop butt should be raised to such a height as will enable the targets to be correspondingly raised with safety so as to be visible from at least a thousand yards without an elevated firing point.

The following should be the trained soldiers' course for infantry, modified as necessary for cavalry.

Unless otherwise specified the firing should be independent, and all practices should be executed by sections. Long range volleys by companies.

In all practices, except where otherwise specified, each man should have his own target.

(1) *Individual practices.*—At varying distances between 500 and 1,000 yards. Two distances at head and shoulder targets; two distances at head and trunk targets; two distances at full-sized targets. Five rounds at each distance. 10 rounds a day. Total 30 rounds. 3 days.

(2) *Attack practice.*—Sections to advance from about 1,000 or even 1,200 yards, and, utilising cover, to fire five rounds at five different distances up to 500 yards. Total 25 rounds. If 25 rounds are considered too many for one day, the practice might be divided between two days, but should invariably be completely executed each day, blank ammunition being used at those distances at which ball is not fired. It must be remembered, however, that the men should be accustomed to expend a considerable number of rounds consecutively as would be the case on service, and 25 rounds can hardly be considered excessive. This practice might with advantage be rehearsed with blank ammunition. An officer should be stationed off the range to watch the utilization of cover.

The targets for this practice should be as follows:—

1st Distance.—Dark coloured khaki life-sized figure of a running or crouching man on a light khaki target, six feet square, moving between the markers' butts without a pause at the rate of five or six miles an hour. Time—75 seconds. It is presumed that the distance between the markers' butts will, under this scheme, be about 30 yards. Thus this time allows the target, travelling uninterruptedly, to move across five times. Men may sometimes be able to put in two shots during a single exposure, and should be encouraged to do so if accuracy does not suffer thereby.

2nd Distance.—Separate stationary head and trunk targets for each man in section.

3rd Distance.—Full-sized khaki figures for each man in section appearing and disappearing for eight and six seconds respectively.

4th Distance.—Separate stationary head and shoulder targets for each man in section.

5th Distance.—Separate stationary heads for each man in section.

The time occupied in changing targets should be utilised by the section in advancing under cover, assisted by an imaginary artillery; and the officer (a senior one) superintending the utilization of cover should be empowered to deduct points from men who are particularly careless in this respect 25 rounds.

(3) *Rapid independent fire.*—Three distances between 500 and 200 yards, three rounds at each distance. Men to double between the distances. Targets, vanishing head and shoulder 9 "

(4) *Magazine fire.*—200 yards. Head targets 11 "

(5) *Volleys by sections or companies.*—Moving target 6 feet by 12 feet. Two distances between 1,000 and 800 yards. Five rounds at each distance 10 "

(6) *Long range independent.*—Moving target as above, 1,200 yards 5 "

(7) *Long range volleys.*—Target, area marked on ground and covered with canvas, 1,500 to 1,800 yards 5 "

(8) *Long range independent.*—Targets, full-sized figures, 1,500 to 2,000 yards 10 "

(9) A résumé of the above twice a year, *i.e.*, a continuous practice as follows, executed in one day :—

	Rounds.
(a) Long range volleys	3
(b) Independent at moving target	3
(c) Attack practice, 3 rounds each distance	15
(d) Rapid independent, 2 rounds each distance	6
	—
	27
Repetition	27
	—
Total	54

The above gives ten days on the range and an expenditure of 159 rounds. Assuming that, on an average, two days a week—that is, two days a month—would be devoted to musketry, then, according to this scheme, twenty-four days would be available annually. Some of the remaining fourteen days should be utilised for repeating some of the more important practices and at least six days should be set apart for field firing practices which should be executed on principles partaking as far as possible of the conditions of actual warfare.

Combined musketry and tactical exercises should be carried out on the lines of those performed by the Queen's Own Guides Infantry--

				Rounds.
Repetition, say	...	...	...	50
Field firing and tactical exercises	...	...	...	50

In addition to the above, short ranges should be constructed in barracks where the men could practice at small moving and vanishing targets ... 50 rounds.

Night firing, etc., should be practised whenever and wherever circumstances permit.

Regiments stationed in the hills have greater facilities for carrying out tactical exercises with ball ammunition than those in the plains, but there seems to be no reason why large camps could not be periodically formed at suitable places for more extended work instead of the unpractical rifle meetings held at present. Such country as that near Dehra Dun, Delhi, Jhelum or in the Central Provinces suggests itself. It is a question of expense, but that ought not to be allowed to interfere with any scheme which is calculated to ensure the increased practical efficiency of our army.

The great advantages of the system of striking off squadrons and double companies for training and musketry once a month are--

- (1) The whole training is more continuous and progressive.
- (2) The officers are more in touch with their men.
- (3) The men have not so much time to forget what they have learnt.
- (4) The men are kept in better physical condition.
- (5) They are not so liable to get stale.

This system, however, should not interfere with battalion, brigade and divisional training. One day a week might be set aside for battalion work with one whole month in the drill season, besides the month for brigade and divisional manœuvres mentioned hereafter under sub-heading (f).

(b) *Physical Training.*—The present system can hardly be improved. It is, however, important to emphasise the necessity for the training being constant. Muscles become soft and wind short when training is neglected or performed in a desultory manner. There is a certain class of man, in both the British and Native Armies who tries to avoid exercise and bodily exertion as much as possible. Particular attention should be paid to these and also to those who do not take part in games.

Entrenching might also come under this heading, for it is not only a drill and practice of the first importance, but is splendid exercise. No body of troops should ever be allowed to occupy a position under any circumstances without entrenching itself.

(c) *Marching*.—Marching is really part of physical training and a most important part. Infantry should not require weeks of campaigning to get it into marching order. War is the tournament for which every man calling himself a soldier should keep himself in condition. Constant marching under service conditions should be practised—not merely marching along a road with no object in view. Simple schemes should be worked out; for instance: two companies might be started from different points to seize a bridge, village or defile at equal distances from each; or, one company might be detailed to cut off a convoy escorted by another company. Time and distance should, of course, be carefully worked out beforehand by the commanding officer or adjutant. Other exercises of a like nature will suggest themselves and will prove instructive and interesting as well as being good training in marching. The men should also be trained to carry the weight approximately equal to that which they would have to carry on service.

Night marches also should be constantly practised. Night marching with troops untrained in this important subject is dangerous. We have many records of failures in night operations, but we have also instances of success. The day for surprises in war is not over, and well planned and well executed night movements are among the most important factors in surprises.

Officers, non-commissioned officers and men should be taught to find their way across country by the stars and by compass; but this cannot be learnt in cantonments or on the parade ground. A few theoretical lessons are, of course, necessary, but in this, as indeed in every other branch of military training, more practical work in the country is required. Small parties under officers should go out for a few days at a time and should practise this and other detached duties. Each man of the party should be required to perform every exercise. It is useless for the officer to lead his men under all circumstances and to do everything himself. The men will follow blindly, unintelligently and with scant interest in the operation. Each man should be taught and made to think for himself and to work out in his own mind the simple problems on the ground, as he would have to do if he were left to his own resources on service.

Officers and men should be required to reconnoitre the route to a certain point and then lead a force thither by day or night.

The development of cunning, which is innate in every human being, of an eye for country and natural phenomena, and of the appreciation of what to observe and how to report it is the object to be aimed at.

(d) *Drill*.—It is unnecessary to dwell long on the subject of drill. In its larger sense it is essential in the earlier stages of every branch of the soldier's education. But, in the narrower sense of actual work on the barrack square or parade ground, there is little doubt, but that it can be overdone; and in this excess lies one of our constant and ever-present dangers—the exaltation of the means to the dignity of the end.

Good training in marching combined with the ability to execute a few simple and necessary manœuvres is all that is required. We do not require a stiff clumsy machine, but an elastic one, each component part of which must be transformed into a more intelligent individuality possessing some faculty of independent initiative.

The drill of the attack should certainly be practised as follows :— The commanding officer, with a few men armed with blank ammunition, should take up his position at the point to be attacked and should carefully watch the development of the attack, noting the matter in which the men utilise cover and causing those officers and men, whom he considers would have been wounded on service, to be fallen out. A record should be kept of those most negligent in this respect and a recurrence of such carelessness should be severely dealt with. It must be remembered, however, that, while there is no excuse for the men exposing themselves unnecessarily, the officers are, in the nature of things, less able to conceal themselves and at the same time efficiently perform their duties of leadership.

(e) *Detached Duties.*—Do our drill books leave anything to be desired as far as theoretical teaching in the above subject is concerned? Very little. Our failures are the result of our neglect to apply practically and intelligently the principles laid down, and of our inability—born of years of peace training and manœuvre—to realise that rifles are not always loaded with blank ammunition or that our enemy is any degree more formidable than are our opponents of a field day. The remedy is simple. The execution of it will entail harder work from both officers and men. There must be more practice in the field and of a very different type from that prevailing at present; in fact, practice to an accompaniment as nearly approaching the music of the whistling bullets and the humming shells as is possible in peace time. The troops must at first be exercised in small parties, and the enemy must be represented by a few officers, or picked non-commissioned officers, carefully concealed or advancing under cover as circumstances may require. All exercises should partake somewhat of the nature of competitions.

First, as regards outpost duty. The enemy should be represented by a few men, preferably officers, whose names should not be intimated to the outposts. These should rendezvous some 3 or 4 miles in advance of the line to be taken up by the outposts and the time of their moving off from the *rendezvous* should correspond with that at which the outposts commence to move into position. The object of the enemy should be to elude the patrols and sentries by caution and stealth and ascertain the exact positions and strength of the piquets, and even of the supports and reserves if such are employed. Each man of the enemy should write down his observations and the time at which he made them. The object of the outposts is to *see* the enemy. When any man of the outposts sees an enemy he should record his name and the time and place at which he saw him, communicating, of course, with his piquet at the same time in the ordinary way.

As soon as all ranks have become fairly proficient at this exercise, non-commissioned officers and men should be freely used to represent

the enemy. It is hardly necessary to remark that those men who show themselves most skilful in eluding observation and obtaining information, or, that those companies which display the most highly developed detective powers, should be specially noted. But the exercises must be performed in a business-like manner, and the careless and unobservant men should be suitably and forcibly reminded that a repetition of their mistakes on the battle field would lead to their capture or death.

To ensure that the exercise is not performed in a perfunctory manner by the men representing the enemy, and to obviate the possibility of their imaginations being drawn on too freely, it might be well to fix a large sheet of paper or cardboard, containing a few words in large characters, on to a tree or in some suitable position close to each piquet, support and reserve. The location of the paper, the knowledge of the number of words it contained, and the actual reading of the sentence might be regarded as the successive steps of progressive value towards the attainment of the object of the scouts of the enemy.

Scouting.—No improvement can be suggested to the excellent little book on this subject by Major-General Baden Powell. But all the books and lectures in the world will not make a man a good scout any more than a thorough knowledge of the rules of cricket will make a man a good cricketer, unless he is in constant practice and in good training. If all soldiers trained themselves for the game of war with half the zeal with which many of them train themselves for polo, football, cricket and other games, we should acquire a much higher standard of efficiency, suffer fewer mishaps on subsequent campaigns, have a lower rate of sickness in peace time and in war time, and defeat our enemies more rapidly than we do now. But this is an ideal which would require years of patient, strenuous and earnest teaching, not only of our soldiers, but of the sons of our Empire at large, to attain, and is somewhat beyond the scope of the subject under present consideration,—scouting. For instruction and practice in this important subject the system suggested above can be modified at will; the most essential points to be borne in mind being as follows:—

- (1) The positions to be reconnoitred should vary according to circumstances:—Those probable under the conditions of civilised warfare, and those generally met with in savage warfare; those on open level country, and those in hilly, broken and difficult country.
- (2) The men should be taught to reason out for themselves probabilities and possibilities, to place themselves mentally in the enemy's position, to consider the lie of the ground, and, in fact, to gradually acquire that fine instinct and cunning which is essential to the hunter, and that knowledge, combined with instinct and cunning, which is the stock in trade of the colonial farmer, the back-veldt Boer, and indeed of every man who spends his life face to face with nature in her wildest form. This standard is difficult of attainment by our men, but with practice we can approach it.

- (3) It should be impressed on the men that their recognition by the enemy is equivalent to a wound and disablement.
- (4) Those men who display the greatest aptitude for this work should be entitled to wear a special badge and should receive such slight advantages as may be appreciated by them.

All this means work, constant work, for all, and, on the part of officers, a sacrifice of a portion of what is now their leisure.

At least twice a year companies under training should be taken out into the country to different places, and should remain out for a full week each time, as far as possible, under service conditions. In this way officers and men will acquire a knowledge of the country and will derive great advantage and experience from working over varied ground. If the ground be suitable, some portion of the musketry course should invariably be executed during these outings.

The wear and tear of uniform would undoubtedly be considerable, but that is another matter. Scouts might be provided with leather knee-caps, and the field service overalls of all the men might be made double at the knees.

In some instances during the war there has been a lamentable lack of the power to keep touch, or, perhaps it may be, a lack of appreciation of the necessity for doing so. Our drill books tell us that once touch with the enemy has been obtained, it should never be lost. In several cases the enemy has been located and preparations have been made to attack him, but owing to the loss of touch he has either slipped away altogether or taken up another position during the night from which he has been able to inflict considerable damage by surprise. How can this be remedied except by the constant practice of the art of keeping touch in peace time?

(f) *Field Days and Manœuvres*.—Of all the various phases and steps in our peace training our field days are, perhaps, the worst. Instead of affording opportunities for the final delicate touches by which the human instrument of war is tuned up to concert pitch, they are, more often than not, occasions for the snapping of a string or for a woful running down culminating in a series of inharmonious discords. Let us consider where the faults lie and what they are.

As an almost invariable rule, the preliminary orders for a field day are published in station orders, the General Idea is communicated to Officers Commanding Forces a day or so previous to the exercise, and the Special Ideas are given to all concerned on the ground. The forces, the exact composition of which is known to every officer and man of the garrison, rendezvous at certain times and at certain places generally within 3 miles of one another. The field of operations is generally limited by crops and marked by certain defined boundaries. The duration of the operations is usually limited by the men's dinner hour. The cavalry of both forces are sent forward and, even if they cannot see each other from the start, certainly come in touch in a few minutes. If they are cautious and attempt to work carefully round or through the opposing screen to obtain accurate information of the enemy's main body, they delay their impatient

infantry and are stigmatised as wanting in enterprise and dash. If they push on heedless of blank ammunition, they are justly told that it is impossible. Finally, the burning desire for a gallop and a charge is too strong for both parties and their action culminates in a cloud of dust between the opposing bodies of admiring infantry. Umpires gallop up and put one or other out of action for a time. So much for the cavalry, much maligned cavalry forced by circumstances into impossible positions which afford it the very worst training and practice for its important duties in actual warfare. Meanwhile the commanders, having got rid of their cavalry and oblivious of, and indifferent as to, its operations, and knowing beforehand practically all they require as regards the enemy's position or line of advance, as the case may be, proceed to action. The various phases of attack and defence are usually methodically, rigorously and admirably carried out in accordance with the instructions in the drill books, but there it ends. The opposing forces are usually visible to each other at an early stage. Troops are moved about in solid masses well within range of artillery and long range rifle fire. Even the firing line often marches steadily and uprightly across the open with very small intervals between files. The distance of 1,200 to 1,500 yards, which probably separates the forces when fire opens, is covered in one-tenth part of the time that would be required on service, even granting that such an advance could be made at all. There is rarely any retirement from the original position to fresh positions in rear, and there is never any pursuit. The attacking force is seldom, if ever, repulsed or checked, and never lies glued to the ground behind anthills for minutes, much less for hours. It moves stolidly on, with its face usually turned homewards, till the "cease fire" sounds. Time does not permit of the exercise being carried to its logical conclusion. Officers have to get back to their offices and the men to their dinners. Then follows the "palaver". Praise and blame are distributed according to circumstances. The listening officers gather that the day has been more or less a success, but the men neither know nor care what the result has been.

Now for the remedy. During the drill season, at least during the latter portion of it which is devoted to manœuvre and field days—say, for a month, the garrison should be considered on field service, ready to proceed at a moment's notice on an expedition lasting from one to three or four days. A little imagination on the part of the Officer Commanding and his Staff Officers is all that is required. The garrison might be regarded as a force in occupation of a town in an enemy's country, on the same lines on a smaller scale as the halt at Bloomfontein,—to take one instance among many. A brief fictitious history of the course of the imaginary war up to the date of the occupation, and of the movements of the enemy and of other portions of our own army, together with the ultimate object of the operations, might be published in orders. The cavalry quartered at the station should commence its "Long Reconnaissance" on some definite plan fitting in with the general scheme, and the Cavalry Commander should be furnished with sealed envelopes to be opened at certain stated times. These envelopes should contain the various items of

information in sequence on which the "Special Idea" is built up; in other words, the information which would be gleaned by the Intelligence Department and the advanced cavalry under ordinary circumstances. This information should be transmitted under service conditions to the officer detailed to command the force at head-quarters. Prior to this a party of officers, non-commissioned officers and intelligent men, say, 50 in all,—all mounted if possible,—should be despatched to represent the enemy at a point to which the cavalry will find itself directed by instructions in one of the envelopes. Each man of this enemy should represent ten, twenty, fifty, etc., according to requirements and to the strength of the garrison; and the enemy's force can, of course, be reinforced in this way at any time at the discretion of the Director of the Operations. The actual strength of the enemy should never be notified, but merely the number which each man of the enemy represents; and it should be left to the cavalry or subsequent observation to ascertain the strength. The action of the cavalry prior to the arrival of the main body should be guided by circumstances and by the strength of the enemy. It might fight and win an action on its own account, and then the enemy might be reinforced to oppose the main body; or it might be driven back and hold a position, river crossing or defile until reinforced.

The great desideratum is an efficient umpire staff. There should always be two or three thoroughly reliable umpires with the enemy. They should assume the same positions as the enemy and should carefully watch the conduct of the various units of the attacking force—as regards utilization of cover and so forth—while they should record the probable degree of loss which, in their opinion, the enemy would have been able to inflict; and they might signal to the Umpire-in-Chief what units should be put out of action. Mounted troops should never move faster than a trot unless under exceptional circumstances, when, for instance, the cavalry seizes an opportunity to charge the retreating enemy, or artillery gallops into action in a new position.

Bivouacs, outposts, night marches, surprises and ambuscades could all be practised on both sides; the mobility and small numbers of the enemy affording ample scope for dashing exploits on his part, and for vigilance, intelligence and individual initiative on the part of the troops engaged. Again, all that is required is the exercise of a little imagination on the part of the Director of the Operations and of all concerned.

The force might return victorious, or be forced back defeated, to its town of occupation; ready to sally forth again to check a fresh series of operations by the enemy who, it must be remembered, is always present in some part of the country.

During the period of imaginary field service outposts should be maintained and fixed posts should be established at suitable points.

The officer in command of the enemy should have absolute discretion as to the position he takes up and the disposition of his force. The Umpire-in-Chief can easily inform both sides of the arrival of

imaginary reinforcements for the enemy, and the mobility of the latter will enable him often to change the tide of battle realistically and dramatically.

The above deals almost entirely with the "attack," but it is obvious that the "defence" could be conducted on similar lines,—care being taken to invariably provide for a counter-attack.

The enemy should be easily recognisable by a very distinct difference in dress, and should also be provided with some form of smokeless "puff" or "bomb" to represent artillery.

Imaginary casualties among senior officers should be much more frequent. Only in this way can junior officers acquire the requisite knowledge and practice in handling troops in the field under all circumstances. Casualties to the matériel of artillery should be simulated—broken wheels and so forth—while a certain proportion of the teams might be put out of action to afford an opportunity for the display of ingenuity on the part of the artillery officers in removing or saving the guns.

Above and beyond all, the umpires must be strong and efficient and their decisions, given on the spot, must represent the bullets and shells of battle, the making or marring of reputations, and capture and death.

Finally, the absolute necessity for increasing the duration of any operations connected with attack and defence cannot be too strongly insisted upon. Food for the men should be carried on light carts. Once the operations commence no restrictions or limitations should be imposed beyond the issue of a general caution with regard to crops. Officers should be encouraged to use their common sense and display their cunning in every possible way; obtaining information from natives, employing spies, utilizing railways for the transport of spies and small reconnoitring patrols, and telegraph lines for the transmission of information, and so forth.

As regards manœuvres:—More country should be opened up for extended operations, and small campaigns between garrisons lying comparatively near one another should be organised. It is merely necessary to issue instructions, which should be kept absolutely secret, to the Commissariat-Transport Department to be prepared by a certain date for operations lasting a certain number of days; but not more than 48 hours' notice should be given to the combatant units. A simple telegram to each station stating that the enemy is advancing from the opposing station is all that is necessary. This should be followed by a letter stating briefly what the forces are supposed to represent and the distinctive uniforms worn by each. This will allow ample scope for the display, on the part of Officers Commanding Stations and their Staff Officers, of those qualities which make successful soldiers. The Moveable Columns would become the advanced guards and would move out at once, spies and officers' patrols would be despatched; in fact, everything would be done in the same manner as if the forces were operating against a real enemy. It is hardly necessary to repeat that every station should always,

during the drill season, be in a state of field service, with the Staff Intelligence Department, Signalling Staff, Medical Staff, etc., ready told off and prepared to take up their duties at a moment's notice.

It may be objected that there are difficulties in the way of such a scheme as the above :—Civil authorities have to be informed, camping grounds to be prepared and provisions and forage to be collected. But if we allow such objections to hold good, we defeat the end we have in view,—the practical training of our troops. The operations should be conducted on field service scale, and if that is done, the matter resolves itself into a question of transport. As regards native troops, there should be no difficulty; and if, as suggested above, the Commissariat-Transport Department receives ample warning, there should be none with regard to British troops. Civil authorities should be informed that troops may be moved through their districts at any time during a certain period, that they will require no assistance from the district and that the regular camping grounds may or may not be used.

There is another lesson which we have learnt from the war, but it is, perhaps, the most difficult of all to legislate for or even to fully appreciate, as it contains so many factors and side-issues. When we come to a consideration of the surrenders which have taken place, we are forced to ask ourselves many questions, and one question leads to another.

- (1) What part did defective information play in the series of events which led up to a surrender?
 - (2) Was there any fault in the arrangements for protection?
 - (3) Was there any lack of control of fire by which the ammunition became unnecessarily rapidly exhausted?
 - (4) Were the arrangements for the supply of water defective?
 - (5) Were adequate preparations made for mutual support?
 - (6) What were the arrangements for inter-communication between units actually engaged?
- (1) An attempt to reply to the first question opens up a large subject—
- (a) the efficiency of the Intelligence Department;
 - (b) the necessity of leaving small isolated detachments and garrisons all over the country infested by bands of mobile guerillas;
 - (c) the practicability of centralisation as regards the direction of the various columns operating;

are some of the thoughts which arise, but the subject is too large to enter into here. More care, however, is undoubtedly required in the training of Staff Officers in the art of acquiring and sifting information.

(2) Our system of "protection" is adequate, but the practice of it is indifferent. Our men are not sufficiently accustomed to night outposts and to warding off surprises in peace time. Constant practice

in passing an outpost line on the one hand and in preventing such a passage on the other hand is required. Carelessness and negligence should be very much more severely dealt with.

(3) In some cases there must have been some lack of control, at least in the initial stages of the actions. The difficulty lies in the fact that it is impossible for officers to exercise any wide control without exposing themselves to almost certain death. This points to an increase in the number of officers, or to a very much higher training of the men individually, and this latter must take place in any case during musketry training.

(4) The failure of water in some instances indicates the necessity for arrangements for the storage of water in every position which has to be held and which is liable to be attacked. Collapsible barrels, pakhals, indeed any receptacle should be utilised for the storage of an adequate supply of water before the position is occupied. But this is a matter of transport and commonsense.

(5) Here the question of selection of positions comes in. It is impossible to criticise the positions taken up without an inspection of each, but it cannot be denied that all officers require more practice in this important feature. During peace training no body of troops should ever be allowed to occupy a position that would be untenable in war. Most officers know, or should know, the requirements of a defensive position, but how few can properly apply this knowledge! They are cramped for want of practice.

(6) This is a very difficult question. We have instances of the white flag having been raised apparently without the orders of the officer in command. In the face of modern rifle fire the conveyance of orders to different parts of the field, however small, is a matter of extreme difficulty. It is impossible to legislate for the aberration of human intellect brought on by excessive bodily and mental strain except, perhaps, by some such contrivances as the following:—

1. A definite order communicated to each individual that no surrender or retirement is to take place without the orders of the officer in command.
2. That no one, except the officer in command, is to raise the white flag.
3. That men should be forbidden to carry white handkerchiefs and should be provided with coloured ones.
4. That any man raising the white flag without orders may be shot by the officer nearest to him.

CAVALRY.

Of all the branches of the service engaged in the recent war none has been subjected to such a fierce light as the cavalry, but, if there is one question concerning which it is essential to maintain an open mind, it is this. Much has been said and written about the unfortunate cavalry, and some critics have even gone the length of advocating its entire abolition. Let us consider briefly the conditions under which

it worked. The supply of horses and the difficulties attending their transportation in a serviceable condition to the seat of war were the first stumbling-blocks. A certain portion of the country was unsuitable to the action of cavalry proper. The extraordinary mobility of the enemy, by which he was enabled to elude pursuit after doing considerable damage, the enormous range of artillery and small arms, the vast extent of the positions to be turned, the extreme clearness of the atmosphere, the weight carried by the horses, and the want of familiarity with, and proficiency in, such tactics as were necessary to cope with such an enemy, were all factors which militated against our horse soldiers and brought out to their fullest extent, to the delight of its bitterest opponents, the weak points of that arm.

But in what other war will we find the same conditions prevailing? In what other country in the world will we be opposed by such swarms of perfect mounted infantry?

In this war, certainly, with one or two very trifling exceptions, mounted infantry could have done as much as, and more than, the cavalry.

When operating on suitable ground and in presence of the enemy our cavalry moved over the open veldt in very extended formations, in single rank squadrons and with wide intervals between files. But we were opposed to mounted infantry and could afford to employ such a formation as would have been impossible had we been in touch with a hostile cavalry, which could have rolled up our scattered squadrons before they could have concentrated. Hence it is extremely difficult and dangerous to endeavour to draw conclusions as to our future cavalry tactics from our recent experiences, and we must be cautious how we attempt to mould all our future military policy on the teachings of this war alone. We have recent instances, and brilliant ones, of the power of the *arme blanche* as represented by the cavalry. The Indian Frontier and China are not without their lessons.

Apart from this, however, while Continental Armies retain their cavalry, we cannot afford to abolish ours. But we can and must make such changes in its training and equipment as will tend to the attainment of the most satisfactory results.

The very brief period of service obtaining in foreign armies precludes the possibility of a dual and more elastic training; but with regard to our cavalry, and of course, more especially to the Indian cavalry, it is conceivable that the length of service will enable the men to be made good riders, good horse-masters, proficient in the charge—at present the ultima ratio of cavalry proper—and at the same time efficient mounted infantry; and it must be done. But the training and views of officers and men must undergo some considerable changes; officers must regard their profession in a more business-like manner, and the end must no longer be subordinated to the means. We cannot improve upon the theoretical training laid down in the Cavalry Regulations, nor can we add to the qualifications therein required from our officers and men, but we can and must

demand a more practical application. We must abolish the unnecessary circus tricks of the menage and utilise the time wasted in the riding school and in all the niceties of troop, squadron and regimental drill on the parade ground for more practical purposes. We must complete the training of horses and horsemen in the open country. We must train men and horses to move freely and intelligently in open and extended formations as well as rapidly and accurately in close formations. When we have evolved an efficient horseman and a well-schooled horse, we must train the former to shoot and scout, and the latter to stand steady under fire and, in all circumstances, to lie down when required, and in short to become a more useful auxiliary to his master than he is now—a mere means of conveyance. We must arm our men with either the lance, the length of which should be reduced to seven or eight feet, or the sabre,—not both; and with a better fire-arm.

We must reduce the weight carried by the horse, enlist lighter men, organise some system of pack horses or light carts, and teach, and require from, our men a more practical horse-mastership.*

Much of the above trenches on the question of organisation and equipment; and, as much that has been written under previous headings applies to the training of cavalry, it is unnecessary to dilate further on the subject beyond stating that we require horsemen who can execute a compact charge when required, can confidently undertake the duties of the "Eyes and Ears" of the army and who will be equally at home when required to act on foot. If we cannot attain this, we had better resolve the whole of our cavalry into mounted infantry—for it is an open question whether the rifle of mounted infantry will not hold off any cavalry charge—or give each squadron a machine gun to do its shooting for it and leave the horsemen entirely to the *arme blanche*, scouting and screening duties and shock tactics. This possible use of the machine gun opens up a further field of thought which can have no place here.

ARTILLERY.

One of the most important lessons learnt during the war is the immense value of artillery. Smokeless powder prevented the location of the enemy's guns and enabled the hostile gunners to serve their concealed guns with more or less impunity; while, on the other hand, the long range of modern small arms rendered the working of our field guns in the open a matter of difficulty.

We have learnt—

- (1) That the promiscuous bombardment of an enemy whose position and trenches have not been accurately located is of little use.

* Since the above was written, the letter from "Silladar" regarding the reduction of weight has appeared in the *Pioneer*. His suggestions deserve earnest consideration. Most of them appear to be excellent with the exception of that regarding the abolition of the cloak. The men require a long cloak to protect their knees and also to keep their legs warm and dry if obliged to sleep in the open without any other covering.

- (2) That once these have been located, however, shrapnel fire can control the enemy's rifle fire.
- (3) The value of heavy ordnance on the field of battle.
- (4) That the range of shrapnel fire must be increased, without affecting mobility, up to the extreme limit of observation which must be arrived at by the provision of good telescopes and field glasses and by a higher training of officers in the observation of fire.
- (5) The moral value of pom-poms in hill warfare and their utility as range-finders.
- (6) The necessity of more careful "preparation" of the attack by artillery.
- (7) The necessity for careful study of the art of, and for more practice in, handling artillery by senior officers likely to command mixed forces in the field, and for the acquisition by them of a thorough knowledge of the capabilities of the arm.
- (8) That horses should be given more exercise to keep them in hard condition.
- (9) That the ration should be increased.
- (10) That a reduction should be made in the weight of the harness.
- (11) That swords should be abolished in field batteries.
- (12) The necessity for well-led artillery escorts, and for efficient scouting in advance of batteries coming into action.

Some of the above deal with organisation and equipment. Those dealing with training speak for themselves and require little comment.

MOUNTED INFANTRY.

It is impossible for any student of the late war to overlook the part played by this branch of the service. But many questions arise in this connection. In the first place, we have no organization for mounted infantry in India. Secondly, is the system of training, such as it is, correct? Thirdly, should a regular corps of mounted infantry be established? An affirmative reply to the latter question leads to the former being answered in the negative. But the whole question is one of expense. As regards the British Army, the matter must be left entirely to the Home authorities. Whether they decide to maintain the present system or to form a regular corps of this useful arm is a question which will not very materially affect India. A more important one is whether anything can be done towards the formation of a corps in the Native Army. We have splendid raw material both in men and horses to work upon. The system of training men in infantry regiments as mounted infantry and then taking them away in time of war is unfair to the infantry and is not calculated to develop to their fullest extent those qualities which are required to produce good mounted infantry. In fact, to say the least of it, it is a half and half measure. We require a regular corps officered by specially selected officers and recruited by specially enlisted

men. It is immaterial, so far as training is concerned, whether the units of this corps are battalions or companies. Organization by companies on some such system as that obtaining in batteries of artillery is preferable for the following reasons :—

- (1) Less expense, initial and recurring.
- (2) Less barrack accommodation required in each station.
- (3) More easily handled as regards training and interior economy.

The initial strength of the corps should be—

- (1) Punjab; twelve companies,
- (2) Bengal; six companies,
- (3) Bombay; three companies,
- (4) Madras; three companies,

forming a nucleus to be increased hereafter as found desirable.

Each company should ordinarily be composed as follows :—

- 1 Captain in command.
- 2 Subalterns.
- 4 Native officers.
- 120 Non-commissioned officers and men, including farriers and salutri.
- 127 Horses, preferably Arabs, not more than 14'2 in height.
- 5 Light carts (one per section and one for the officers) driven by the farriers, etc.

In addition to the above officers, an Inspecting Officer should be appointed to every six companies. He should work on the same lines as the Inspecting Officers of Imperial Service Troops and would assume command when two or more companies from his district were sent on service.

The uniform and equipment should be of the simplest and most serviceable description.

The officers should, in the first instance, be selected from the Native Army, cavalry or infantry, and should be seconded for five years; advancement going by selection, as far as possible, in the corps itself.

The corps should be on the silladar system.

As regards training—

- (1) Sufficient training in riding to enable the men to sit on their horses with ease and to manage them in the open, not only in the riding school.
- (2) The highest possible training in musketry on the lines already laid down. None but really first class shots should be retained.
- (3) Constant physical exercise and, if possible, climbing, to keep the men in hard condition.

- (4) Careful and practical training in scouting and all detached duties.
- (5) Thorough training in practical horse-mastership. The men should not only know how to groom their horses, but should be taught how to treat simple injuries and illnesses, and above all how much horses are capable of, how to save them and how to get the most out of them without reducing them to a state of uselessness through neglect and over-exertion.

CONCLUSION.

The whole of this great subject might be summed up in the one word "practice." It is one thing to lay down a system and another thing to carry out that system practically. To recapitulate the lessons which must be taken to heart—

1. *Infantry*—

- (a) Increased range and accuracy of modern fire-arms necessitates increased practice in taking cover and advancing intelligently under cover.
- (b) A higher training in musketry is required, whereby every man will become a good practical shot and will appreciate the necessity for husbanding his ammunition and of not expending it recklessly and uselessly.
- (c) Increased training in marching, hill manœuvres and physical exercises, whereby an increased smartness in actual drill will be generated without the expenditure of an excessive amount of time on the barrack square.
- (d) More practice required in detached duties—
 - (1) Outposts.
 - (2) Scouting.
 - (3) Occupying and fortifying camps and positions.
 - (4) Entrenching.

2. *Cavalry*—

- (a) Less time spent in the menage.
- (b) More practice in the open in—
 - (1) Reconnaissance and scouting.
 - (2) Outposts.
 - (3) Dismounted service and musketry.
 - (4) Long advances under service conditions.
- (c) Better and more practical system of horse-mastership.

3. *Artillery*—

- (a) More practice with live shell and at long ranges.
- (b) More practice with escorts and scouts.
- (c) More practice in observation of fire.
- (d) More practice in simulating casualties.

4. *General*

- (a) More practice for senior officers in handling mixed forces.
- (b) More facilities for Staff Officers for the practice of all staff duties in the field.

It has been said, and indeed it seems an almost universal opinion, that we cannot afford to work the British soldier harder, because such a course would affect recruiting, and that until we have compulsory service, we must be content to drift along in the present system. That is absurd. Reasonably hard and interesting work is not the shoe that pinches. What provokes officers and men alike is the extra expense to which they are sometimes put by the wear and tear of uniform, etc. This is but one item in a very large question which has to be faced. It is mainly a question of expense. If we want a good thing or good work done, we must pay for it.

THE RUSSIAN CAMPAIGN IN MANCHURIA, 1900.

(WITH A MAP.)

BY CAPTAIN H. H. DOWDING, ESSEX REGIMENT.

I.—INTRODUCTORY.

While the allied forces were advancing on Peking during the summer of 1900, a separate and distinct campaign was being carried on simultaneously in Manchuria. An attempt has been made in the following pages to sketch, as briefly as possible, the course of these operations. Unfortunately, the sources of information available are almost exclusively Russian, and are perhaps open to the charge of being one-sided; but failing a Chinese "official account" of the campaign, there appears, at least for the present, to be no help for this.

The authorities consulted are: various issues of the "*Voenni Sbornik*," "*Pravitelstvenni Viestnik*," and "*Russki Invalid*," as well as official and other reports which have from time to time been published in the Russian daily press.

Russian troops.—The Russian "Pri-Amur" military district is conterminous with the Chinese frontier from south of Lake Baikal to Possiet Bay (south of Vladivostok). The troops quartered in this great district are approximately as follows:—

Field troops	...	44,000	becoming on mobilisation	51,000
Reserve and dépôt troops	...	3,000	" "	19,000
Fortress and local troops	...	11,000	" "	11,500

The "Kwantung Province" consists of the southern extremity of the Laodun or Kwantung Peninsula (leased to Russia by China) with its head-quarters at Port Arthur. The troops normally quartered there are approximately—

Field troops, 11,000	} The numbers are but little altered on mobilisation.
Fortress troops, 2,000	

Chinese troops.—The attention of the Chinese Government had been drawn to the necessity for reform in army organization on the northern frontiers of the Empire as far back as the eighties. Some necessary measures were actually taken, especially with regard to Manchuria. In 1885 three "contingents" were formed at Mukden, Girin and Tsi-tsi-kar. Each of these consisted of—

- 8 Battalions, Infantry ("ins") of 500 men each,
- 2 Regiments, Cavalry ("tsi") of 250 men each,

with 20 guns of modern pattern.

The total strength, in time of peace, was 13,500 men, to be increased, on mobilisation, to 35,000 men. In addition, each of the three provinces had its own local force, the total of which combined amounted to 37,000 men.

Russian writers estimate that the addition of armed volunteers, eager to join in a war against foreigners, brought the total number of armed men available in Manchuria up to 100,000 men.

Topography.—Manchuria forms the extreme north-east corner of the Chinese Empire. It is bounded on the north-west and north by the rivers Argun and Amur; on the east by the river Ussuri, Lake Khanka and the Corean frontier; on the south by the sea; and on the west by Mongolia. Its area (362,310 square miles) is greater than Austria-Hungary and twice that of Japan.

Mountains.—Speaking generally, about two-thirds of Manchuria are hilly country. There are three main mountain chains—

- (a) On the west is the Great Hingan range, about 400 miles long, running north to the Amur. All roads from Trans-Baikalia to the centre of Manchuria cross this range. The hills are for the most part densely wooded, with an elevation of from 5,000 to 6,000 feet. But the slopes are easy and rolling.
- (b) On the north is the Little Hingan range, rising to an elevation of from 4,000 to 5,000 feet. This is also thickly wooded and full of game.
- (c) The third range is the Chan Bo Shan, which extends for over 500 miles along the east and south-east of Manchuria, and forms a wide mountainous region, wild and difficult, with elevations of 6,000 feet.

Rivers.—The river Sungari, the chief water-way of the country, rises in this range and flows in a north-easterly direction to the Amur for a distance of 800 miles. It is navigable as far as Girin, and runs through a broad, populous and cultivated valley. The town Harbin, in the very heart of Manchuria, is thus easily approached from the north. On the other hand, the Sungari might well have served the Chinese, had they decided to attack Khabarovsk. The "Eastern Chinese" Railway Company has a flotilla of 60 steamers and barges on this river.

One of its tributaries—the Nonni—is also important as being navigable as far as Mergen. It is therefore a highway, as it were, from the central reaches of the Amur into the heart of Manchuria. Its water is of excellent quality.

Population.—It is difficult to get reliable figures, but the population has been estimated at 15,000,000, and also at half that amount.* Its distribution is very uneven, and varies from 4,000 to the square mile (in the southern province) to 150 and less per square mile in the north.

*The Statesman's Year-Book, 1901, gives the population of Manchuria as 7,500,000 souls,

Roads.—Roads are generally very bad. Being unmetalled their surface becomes gradually hollowed out by traffic, and in the rains they are nothing but running streams. There are practically no roads fit for troops with a baggage train, but there are many fit for pack animals. The valley of every little stream has a road, or track, of this kind.

The main roads leading from Russian territory to the main centres of Manchuria are—

- (a) Blagovieshchensk—Aigun—Mergen—Tsi-tsi-kar—Bodune—Girin=660 miles. A post road with telegraph and suitable for all arms.
- (b) Tsurukhaitui—Khailar—Tsi-tsi-kar=330 miles. Also a post road, but a bad one.
- (c) From the same starting point to Mergen=310 miles. A bad carriage road.
- (d) Khabarovsk to San-Sin=275 miles. A bad bridle road.
- (e) Poltavskaya—Ekho—Ninguta—Girin=250 miles.
- (f) Possiet Bay—Hun Chun—Omoso—Girin=250 miles, but less important than (e).

In Southern Manchuria, Mukden is connected by good roads with Girin, Port Arthur, Inkou and with Peking. The so-called "Imperial" road to Peking is metalled and is kept in good order.

Chinese fortification.—At almost every town of any importance there is a fortification ("impan") usually for a garrison of about 1,000 men. These "impans" are of one type: a rectangle of about 180 yards \times 110 yards. The rampart is 14 feet thick at the bottom and 2½ feet thick at the top. The exterior is almost perpendicular, but there is a banquette inside. Guns are emplaced in the corners. Clay-built barracks are inside, and in the centre is the house of the commander, usually adorned with turrets. There are sometimes similar turrets at the corners of the "impan."

General situation, May—June.—14th July.—The disturbances which broke out in China during the month of May did not at once spread to Manchuria. Construction work on the railway went on as usual, and there seemed to be some hope that the 'Boxer' movement might be confined to the Pechili Province. Towards the middle of June, however, disturbances were reported from various points on the railway. Still these had been easily suppressed, and the local Chinese authorities had assured the railway staff that order should be preserved in future. But it soon became evident that the anti-foreign movement was spreading. The rapidity with which the area of disturbances widened out, and the fact that acts of hostility occurred simultaneously at widely distant points, led to the inference that an organized movement was at the bottom of them.

The Russian garrisons in the Pri-Amur district had been considerably weakened by the despatch of troops to join the allied forces operating in Pechili. The Russian Government considered that the

situation called for immediate measures to strengthen their position and accordingly the order to mobilize in the Pri-Amur district was issued on the 25th June.

Disturbances continued to increase in numbers and importance. The troops in the service of the "Eastern Chinese" Railway Company were compelled to withdraw, before superior numbers, either across the frontier or to the central and most important point on the line—Harbin. Here a large amount of stores, material, workshops, etc., had been collected, and even, from a purely technical railway point of view alone, Harbin could hardly be abandoned without a blow. It was accordingly held by railway troops and employés, and outlying detachments retired and concentrated there.

By the end of June things were becoming critical. With the exception of Harbin itself, practically the whole of the line under construction was in the hands of the Chinese, and every day meant further damage done.

In the early days of July the Chinese Governors demanded that the Russian Railway officials should withdraw their guards, workmen, and employés. This, again, looked as if the disorders and acts of hostility were approved, if not directed, by the Central Government at Pekin. A series of measures were now taken by the Russian Government.

On the 6th July orders were issued for the despatch of the 3rd and 4th Rifle Brigades (with their Artillery) from European Russia by sea.

On the 9th July Russian troops were ordered to cross the frontier into Manchuria.

On the 12th July a force* under Major-General Sakharov moved, from Khabarovsk, up to the mouth of the Sungari with a view of proceeding up that river to the relief of Harbin by boat.

On the 14th three more Rifle Brigades† (with their Artillery), a Battery of the Guards Rifle Artillery Division, and a Sapper Battalion, with corresponding parks, stores, and field hospitals, were ordered to proceed from Europe to the Far East. Arrangements were also made for the despatch, from European Russia, of 2 Fortress Battalions and 5 Rifle Battalions; orders for the formation of these additional units having been issued during the month of May.

On the same day (14th July) two Russian river steamers on the Amur were fired on from the Chinese bank of the river near Aigun.

II.—OPERATIONS.

Such was the general situation on the 14th July in Northern Manchuria. The operations from now onwards seem naturally to fall

* 4 Battalions, 4 Sotnias, 16 Field and 10 Heavy guns, with a detachment of Sappers, drawn from the garrison of Khabarovsk and Blagovieshchensk.

† Of these, only *one* Brigade (the 5th) was ultimately despatched.

into two periods or phases—

1st Phase.—(15th July—2nd September) includes (a) operations in Northern Manchuria for the security of the frontier, relief of Harbin, ending with the occupation of the whole of the main line of railway; and (b) operations going on simultaneously in Southern Manchuria for the occupation of the southern branch of the railway.

2nd Phase.—(September—2nd October) includes the operations carried out in both Northern and Southern Manchuria, with a view to the occupation of the principal centres of the country—Girin, Ninguta, Omoso, etc., and of the remaining portion of the railway, ending with the occupation of Mukden.

The general plan of campaign was as follows:—Manchuria was divided into two parts by an imaginary line running east and west through Telin (40 miles north of Mukden). North of this line the troops of the Pri-Amur district—with reinforcements as they arrived—were to operate under the command of Lieutenant-General Grodekof; while south of it the troops of the Kwantung Province were to act under the general command of Vice-Admiral Alexeef. In the north five columns were to advance on the main line of railway and converge on the very heart of Manchuria—on that part of the line which lies between Harbin and Tsi-tsi-kar. These columns were as follows, counting from the right flank of the general advance, or, in other words, from the north east to the south-west:—

- (i) Major-General Orloff's column (4 Battalions, 6 Sotnias, 6 guns) moving from Trans-Baikalia on Khailar, and thence along the railway towards Tsi-tsi-kar.
- (ii) Major-General Rennenkampf's column (4½ Sotnias and 2 guns*) moving from Blagovieshchensk by Mergen on Tsi-tsi-kar.
- (iii) Major-General Sakharoff's column (4 Battalions, 16 Field and 10 Heavy guns, 4 Sotnias and a Sapper detachment) moving up the Sungari river on Harbin.

While on the eastern frontier there were—

- (iv) Major-General Chichagoff's column (1½ Battalions, 6 Mountain guns, 2½ Squadrons) moving from Nikolsk Assuri on Ninguta; and
- (v) Major-General Aigustoff's column (6 Battalions, 12 guns, 2 Sotnias, ½ company of Sappers) moving from Novokievskoe on Hun Chun and then on Ninguta.

It will be convenient to consider the operations of each of these columns, in turn at least as far as the conclusion of the 1st Phase, but before doing so, it is necessary to notice here the events at, and near, Blagovieshchensk, which took place between the 14th July and the formation of Major-General Rennenkampf's column for the advance on Tsi-tsi-kar.

* This column was gradually reinforced during the March up a strength of 6 Battalions, 5½ Sotnias and 20 guns.

Events on the Amur, 15th July—4th August.—On 15th July the garrison of Blagovieshchensk was considerably below its normal strength. Troops* had been sent down the Amur to form part of Major-General Sakharoff's column, now concentrating with a view to moving on Harbin. The regular troops remaining at Blagovieshchensk numbered only some 2,000 men with 8 guns, to which may be added about 1,200 militia and volunteers hastily enrolled.

Hearing that two Russian steamers on their way to Blagovieshchensk had been fired on the day before, Lieutenant-General Gribbski (commanding there) on 15th proceeded with a small force† down the left bank of Amur with a view to reconnoitring and to re-establishing the river traffic. He was unable to advance more than a few miles. Heavy fire was brought to bear on him by greatly superior numbers of Chinese entrenched on their own bank of the river. Moreover, the sound of the bombardment, which had meanwhile been opened on Blagovieshchensk itself: from the Chinese village Sakhalin, was to be heard in his rear. General Gribbski therefore withdrew his force. The Chinese troops threatening Blagovieshchensk were estimated at 8,000 men (armed with Mauser rifles) with 8 guns. Chinese troops also crossed the Amur into Russian territory. The presence in Blagovieshchensk of some 3,000 Chinese labourers, shop-keepers, etc., was considered a serious danger. There was also a population of 30,000 Chinese subjects settled in the district which lies between the Amur and its tributary, the Zeya, where disturbances now broke out. Russian accounts touch rather lightly on what happened, merely saying that the majority of these people "now betook themselves" across the Amur. It is perhaps unnecessary to enquire too closely into the methods of persuasion employed by Russian Cossacks; but the river seems to have become so thick with corpses as to constitute an inconvenience to navigation.

There appears to have been a real fear for the safety of the town ‡. This sudden attack on so vital, and at that moment so vulnerable, a point in the Russian lines of communication seemed to point to preliminary preparation, and to a more or less well-thought out plan of operations on the part of the Chinese. The Amur is the only line of communication between Siberian and Pri-Amur military districts. With this line seriously threatened it would have been impossible for the Russians to fully mobilize the troops in the latter district, or to move reinforcements, stores, etc., there except by sea.

It was essential therefore that this line should not be interrupted and reinforcements were hastily moved up to relieve Blagovieshchensk.

On 18th July a force of 3 Battalions, 1 Sotnia, 8 guns and 2 mortars were despatched from Khabarovsk; and at the same time other reinforcements§ were on their way from Stretensk.

* 1 Battalion, 2 Batteries, 2 Sotnias.

† 2 Companies, 1 Sotnia, 6 guns.

‡ At a Cossack settlement close by owing to the dearth of men available the women and girls donned men's clothes and took their full share of outpost duty by day and night. Sixteen of these ladies specially distinguished themselves for zeal and pluck, and their names were duly published in the official Gazette of Khabarovsk.

§ 3 Companies, 12 guns, under Colonel Servianov, and 4 Battalions, 2 Sotnias, 6 guns, under Major-General Rennenkampf, which again were followed by 1½ Battalion, 1 Sotnia, 16 guns.

By the 19th July (*i.e.*, before any reinforcements had arrived) the troops in garrison had "cleared" the region lying between the Zeya and the Amur, and had also made some smart sorties on the Chinese bank of the Amur, capturing a couple of guns.

On the 21st July the troops of the Siberian military district were put on a war footing.

The first reinforcements began to arrive at Blagovieshchensk on the 23rd July; meanwhile the Chinese bombardment of the town was continued daily—though in rather a half-hearted way, and causing little loss—until on the 2nd August the last of the reinforcements having arrived, it was possible for the Russians to assume the offensive on a larger scale than heretofore. It was decided to dislodge the Chinese from their positions, along the Amur, between Sakhalien and Aigun. Two columns, supported by artillery fire from the left bank of the Amur and from the steamer *Selenga*, seized Sakhalien, with a loss of 7 killed and 21 wounded. Next day (August 3rd) these columns continued their advance to Aigun which was occupied on the 4th August after 7 hours' fighting.

Blagovieshchensk being thus relieved, and the line of the Amur cleared of Chinese, the further operations of the Russian columns advancing into Manchuria will best be followed, by taking each of the five columns already mentioned in its proper order.

(i) *Major-General Orloff's* column crossed the frontier on the 25th July at Abagaitui* and reached Dalai Noi (30 miles). After a smart affair with a Chinese force of 5,000 men, at Ongun on the 30th, Khailar was occupied on the 3rd August. The Chinese troops there retreated in the direction of Tsi-tsi-kar, leaving a large amount of supplies, arms and ammunition behind them.

On 4th August cavalry were pushed on to Djarmete, and on the 11th the cossacks of the advanced guard reached Yakshi.

On 12th August the main body of the column reached Djarmete, and next day (13th) the advanced cossacks at Yakshi were sharply attacked by a Chinese force estimated at 7,000 men. General Orloff pushed on with his main body and arrived there on the 14th after a trying march of 25 miles. When the Russian reinforcements came

*General Orloff, in a private letter, gives the following reasons which lead him to adopt this line of advance, in preference to that from Tsurukhaitui.

- (i) A double crossing over the Argun River (by boats) as well as one over the Khailar River were thus avoided. This river incorrectly shown on the maps, as having to be crossed on the road from Abagaitui, really runs quite differently.
- (ii) There is very little water available by the road from Tsurukhaitui, whereas the road from Abagaitui runs along side a river.
- (iii) The grazing available by the latter route is good. This point was important, as 170 head of cattle were driven with the column.
- (iv) The Chinese would hardly expect an advance from Abagaitui, as the other road was that most used. Moreover some of the Railway Company's troops had retired in that direction on Tsurukhaitui.
- (v) Officers, who had been employed on the railway, reported favourably on the Abagaitui-Khailar road.

up and advanced to the attack, the Chinese hastily withdrew, and suffered some loss in doing so. That night three advanced sotnias of cossacks reached Mendukhe.

On the 20th the main body reached Mendukhe, the cavalry, Khorgo, and the three advanced Sotnias occupied Irekte

On the 23rd the main body reached Irekte.

On the 24th General Orloff seized, in spite of opposition, the pass over the Hingan range, and next day continued his advance, and on the 26th arrived at Yal.

On the 28th the column reached Djalantun, where a day's halt was made.

On the 30th the advance was continued, and the advanced sotnias, with a horse battery and a party of engineers, soon joined hands with General Rennenkampf's troops (sent out to meet them after Tsi-tsi-kar had been occupied). The engineers with the advanced party repaired the bridge over the Nonni.

On the 2nd September General Orloff's column reached Fulyardi (20 miles from Tsi-tsi-kar)* and the forced march—for such it was—came to an end.

(ii) *Major-General Rennenkampf*, after the capture of Aigun, returned to Blagovieshchensk, but immediately afterwards (on the 6th August) began his advance on Tsi-tsi-kar. Following up the Chinese rear guard General Rennenkampf engaged it sharply on the 7th and 8th, and reached the village San Chan on the 9th August.

The Chinese had taken up a strong position on the hills to the east of the pass over the Little Hingan range. Their numbers were estimated at 4,000 infantry, 5,000 cavalry and 12 guns. General Rennenkampf, however, attacked with 2 Sotnias with 2 guns in the front line and 2½ Sotnias on his right and in support. The Chinese fell back on a second position; but General Rennenkampf found it necessary to await reinforcements.

On the 12th August the first of these reinforcements came up and on the 16th he attacked the pass, defeating the Chinese heavily, taking them in flank and in rear.

Next day (17th) the advance was continued, and that night the Russian cavalry had a successful affair with the enemy at Monakhe. The following morning (18th) the cavalry, after passing the village Koral-Tshan, suddenly appeared before Mergen from the direction of Tsi-tsi-kar. Chinese infantry were occupying the fort and town. After a two hours' artillery bombardment, at a range of from

* The distances marched, on the last nine days, by this column were as follows:—

25th August	... Halt.	31st August	... 28 miles.
26th "	... 15 miles.	1st September	... 23 "
27th "	... 27 "	2nd "	... 10 " (reached Falyardi
28th "	... 25 "		by 9 A.M.)
29th "	... Halt.	Total	... 155 "
30th "	... 27 miles.		

i.e., daily average = 17·32 miles if halting days be excluded = 22·14 miles. Every effort was made to lighten the troops by carrying their packs, etc., on country carts.

800—1,000 yards, the town was taken, without loss to the Russians. Twelve guns, 700 rifles and a large amount of ammunition were captured.

Next day (19th) the cavalry occupied Komnikba-Tshan (36 miles south of Mergen) and the infantry moved from Mergen, leaving a small garrison there.

On the 24th August the column concentrated on the river Nemer and captured at Bordo a considerable amount of powder and many guns, both ancient and modern.

On the 26th the column reached Nin Nan-Tshan and on the 28th the cossacks and one battery occupied Tsi-tsi-kar after a very slight resistance.

This column had thus marched more than 270 miles, in constant touch with the enemy, in three weeks.

Two days later, communication was established with General Orloff's column on the right; and on the 5th September General Sakharoff's column on the left joined hands with General Rennenkampff's force, already concentrated in Isi-tsi-kar.

(iii) *Major-General Sakharoff's* river column—composed of troops drawn from the garrisons of Khabarovsk and Blagovieshchensk—rendezvoused at Mikhailo-Semenovsk opposite to the mouth of the Sungari river, up which it moved in 87 steamers and barges convoyed by three gun-boats.

On the 13th July Fugdin was passed, without opposition.

On the 21st the village Van-li Khotan was seized and burnt as a punishment for its inhabitants having fired on a Russian steamer.

On the 24th a Chinese post on the left bank was destroyed, and the column reached Bayan-tun and found it occupied by about 2,000 Chinese. Next day, however, after two hours' bombardment the Chinese fled in disorder, leaving guns and a large amount of stores behind them.

On the 25th San Sin was reached. The approaches to the town (which is surrounded on three sides by the Sungari, Mudantsan and a tributary of the latter) presented some difficulty. The only fords available were deep and narrow.

On the 27th the Russians took up positions north and east of the town, and next day bombarded it from 9 A.M. till 1 P.M. The infantry and cossacks crossed the fords with the water up to their necks, and finally drove the Chinese estimated at 4,000 men before them after a stubborn resistance. Twenty-two guns, many rifles and a large amount of ammunition were taken.

No further opposition was offered to the column in its advance up the river; and on the 3rd August Harbin was reached. The arrival of the relieving column was none too soon, as the garrison (some 3,000 men under Major-General Herngros, commanding the railway force) had nearly run out of ammunition and was reduced to great straits.*

* A small reinforcement of a few sotnias had reached Harbin, from General Chichagoff's column, only a few hours before the head of General Sakharoff's river column was sighted.

It is said that the Chinese investing the place, who numbered 10,000 men, had intended to deliver a general assault on the same day (3rd August).

Steps were at once taken to strengthen Harbin, and reinforcements* were ordered up from Khabarovsk. Military posts were established along the course of the Sungari to keep the traffic open. Measures were also taken for the pacification of the neighbourhood; Ashe-khe was occupied on the 18th August and troops were sent eastward along the railway line to join hands with General Chichagoff's column.

On the 1st September a force was sent out from Harbin in the direction of Tsi-tsi-kar, in order to get into touch with General Rennenkampf's column there. This was effected on the 5th September.

So much for the three columns which operated from the north. We now have to glance at the two columns which moved from the east, or in other words, from the line of the Ussuri river and from Novo-Kievskoe.

By the end of July this part of the Pri-Amur district had been partially denuded of troops by the despatch of reinforcements to China.† The Chinese were reported to be concentrating considerable forces at Hun-Chun. Wives and families of Russian officers, left behind on the departure of the troops for China, petitioned that measures should be taken for their protection.

If the situation was disquieting, as it is said to have been during the last fortnight of July, the Russians faced it in an energetic fashion. It was considered that with so long a frontier line, and with a dearth of troops to defend it, a merely passive defence would not be enough. "The danger was great, but any delay in crossing the frontier would have been a still greater danger."

With this view immediate action was taken; the whole of the Cossack population on the line of the Ussuri was armed. Every unit that could move was moved and the defence of Russian settlements, etc., was left to a few Reserve Battalions, improvised formations,‡ and young recruits. Two columns were formed and ordered to cross the frontier into Manchuria.

These columns are included it will be remembered, in the 'General Idea' for the campaign in the northern part of Manchuria, and they are therefore referred to here in their proper order (from right to left of the general line of the Russian advance).

iv. *Major-General Chichagoff's* column moved from Nikolsk Ussuriski along the line of railway by Pogranichnaya.

* i.e., 4th Eastern Siberian Rifle Regiment.

† During the months of June and July altogether 16 Battalions, 38 guns, 6 Sotnias, 2 Sapper Companies and 2½ Railway Companies had been sent out of the Pri-Amur district, either to China or to Port Arthur.

‡ 4,856 volunteers of the Russian and Korean population were enrolled for frontier defence. They were formed into 30 Russian and 2 Korean sotnias.

On the 18th July, on the approach of the column, the Chinese garrison of Ekho attacked it, but ultimately retired and evacuated their fort the same night.

On the 19th, however, the Chinese again attacked in the neighbourhood of Ekho, but were repulsed with heavy loss to themselves.

On the 2nd August Russian patrols which had been sent out towards Ninguta came upon a Chinese force of 1,000 infantry, 250 cavalry and 2 guns, which opened fire on them. On the arrival of reinforcements, however, the Chinese retired after a sharp skirmish. Before advancing further, on the important town Ninguta, it was necessary to await the arrival of reinforcements.* (These ultimately brought this column up to a strength of 4 Battalions, 4 Squadrons, 3 Sotnias, 28 guns and mortars, with Sapper and Telegraph detachments.) General Aigustoff, after accomplishing his own special task, arrived and took command of this column, the further movements of which are mentioned below.

v. *Major-General Aigustoff's* column was intended to secure the extreme left; or, in other words, to occupy the south-east corner of Manchuria. Strong garrisons were reported to be holding the Chinese frontier fortifications at Hun Chun and Savelovka. The Chinese apparently attached considerable importance to the former, as some pains had been taken to improve it, and it was armed with Krupp guns. Hun Chun lies about 20 miles from the sea, and would have been a convenient '*point d'appui*' for any movement against Russian territory towards Novokievskoe.

Major-General Aigustoff moved out from Novokievskoe on the 29th July, and early next morning began his attack on Hun Chun. The Chinese seem to have made a determined resistance. The fort was not captured till 8 P.M. when the Chinese fled in disorder. The garrison of Savelovka had evacuated that place on the 27th July without waiting for the Russian advance. It is therefore possible that Chinese troops from Savelovka took part in the defence of Hun-Chun.

The seizure of Hun Chun put an end to whatever danger there may have been to this part of the Russian frontier, and further it secured the left flank of General Chichagoff's column moving from Nikolsk.

General Aigustoff garrisoned Hun Chun (with 2 Battalions, 2 Sotnias, 8 guns and $\frac{1}{2}$ company of Sappers) and took over command of the Nikolsk column from General Chichagoff.†

iv. *Continued.* After awaiting reinforcements on the line of the Mudantsan river on the 28th August General Aigustoff advanced on Ninguta.

After a skirmish with the Chinese at Ekho the column crossed the river Mudantsan, and the following day (29th) occupied Ninguta

* 13th and 14th Eastern Siberian Rifle Regiments.

General Aigustoff's column originally consisted of—6 Battalions, 12 guns, 2 sotnia, $\frac{1}{2}$ company Sappers.

He left at Hun-Chun—2 Battalions, 8 guns, 2 sotnias, $\frac{1}{2}$ company Sappers.

† The four remaining Battalions were sent to Taku early in August; the only reinforcement therefore, from this column to General Chichagoff's, would be 4 (Mountain) guns.

(after a small rear guard action) where a considerable amount of stores, etc., and 10 guns were captured. A small cavalry force, with 4 guns, was at once sent out under Major-General Krejanovski towards Omoso to pursue the Chinese troops (2,000 men with 2 guns) retiring in that direction.

By the operations so far described, the whole extent of the "Eastern Chinese" railway was now in Russian occupation. The line from Abagaitui in the north-west to Pogranichnaya in the south-east (a distance of nearly 900 miles) had been traversed by Russian troops. The general situation at the close of this 1st Phase of the operations was as follows :

General Orloff—Fulyardi,
General Rennenkampf—Tsi-tsi-kar,
General Sakharoff—Harbin,
General Aigustoff—Ninguta, with a garrison at Hun Chun.

Operations in Southern Manchuria.—It will be well to glance now at what had been taking place in Southern Manchuria. A short summary will suffice for these operations which were on a relatively small scale.

Chinese troops having appeared in the neutral ground between Chinese and Russian territory on the Laodun Peninsula, a small force (2 Battalions, 8 guns with half a Sotnia) under Colonel Khorunjenkoff was moved out against them.

On the 25th July the Chinese fort at Sen-yu-Chen was taken by assault. Further damage being reported on the railway, this column was moved northward towards Dashichao, where there was already a Russian force under Colonel Dombrovski, whose communications were now being threatened.

On the 26th July Colonel Dombrovski at Dashichao learned that two Chinese columns were advancing to attack him: one from the north (estimated at 7,000 men with cavalry) and the other from the east with artillery. After moving out and having a skirmish with both these columns, Colonel Dombrovski returned to and remained at Dashichao.

On the 31st reinforcements were sent up from Inkou under Major-General Fleischer, who ordered Colonel Khorunjenkoff to attack the town of Kai Chao. This was done next day (1st August) and Major-General Fleischer's force arrived on the ground in time to open fire on the flying Chinese.

General Fleischer now decided—"for the consolidation of his success"—to seize Hai-Chen, where the Chinese were occupying a strong position with about 5,000 men. On the 10th August he advanced from Dashichao, and after a few unimportant skirmishes on the way, seized Hai-Chen on the 12th August.

FURTHER OPERATIONS.

(a) *In Northern Manchuria.*

The objective of further operations was (a) the occupation of the chief centres of Central Manchuria and (b) to effect a junction

with the Russian forces operating northward from the Kwantung Province and thus occupy the whole of the branch railway line to Port Arthur.

General situation.—The occupation of Peking by the allies was not without effect in Manchuria. The Chinese Governors of Girin and Mukden, apparently realizing the futility of further resistance, began to make advances towards opening negotiations with the Russians. Moreover, the fall of Peking made it possible to re-call at least some part of the Russian forces there, which thus became available for service in Manchuria.

Reinforcements were also beginning to arrive from European Russia and from Siberia.

On 12th August the 3rd Railway Battalion arrived in Trans-Baikalia, and at once went to work on the railway line from Kaidalovo.

On 14th August the 7th Sapper Battalion also arrived in Trans-Baikalia, and was sent on by Khailar to Tsi-tsi-kar.

Towards the end of August the head of the 3rd Rifle* Brigade arrived at Stretensk. This brigade was put into boats on the Amur, to be used as a kind of "mobile reserve," capable of being moved (a) to Blagovieshchensk and thence on to Tsi-tsi-kar (as was first proposed) or (b) to Harbin to join the troops concentrating there for the further advance (which was ultimately done) or (c) to Khabarovsk and thence to Nikolsk Ussuriski to join the general reserve. This brigade ultimately reached Harbin in the early days of October.

About the end of August also the Siberian Cossack Division and other units from the Siberian district began to arrive in Trans-Baikalia.

By sea, the head of the 4th Rifle* Brigade arrived from Europe at Port Arthur on 6th September and the 5th Rifle* Brigade was due to arrive as Vladivostok in the second-half of September.

There were thus enough troops available to deal with even an obstinate resistance on the part of the Chinese should such be met with in the further operations contemplated. From Tsi-tsi-kar, Harbin and Ninguta, altogether 18 Battalions, 25 Sotnias and 78 guns were to converge on Girin. In reserve, the 3rd Rifle Brigade (strength 8 Battalions and 24 guns) was to be concentrated at Harbin. There were also available 12 mounted Sotnias and 2 companies of cossacks belonging to the special railway force.

General Rennenkampf lost no time in beginning the further operations. On 6th September he moved his cavalry southward from

* It is interesting to note the time taken by these units in reaching the theatre of war.

3rd Rifle Brigade ordered to proceed 6th July, began to arrive (by land) towards the end of August.

4th Rifle Brigade ordered out 6th July, began to arrive at Port Arthur (by sea), 6th September.

5th Rifle Brigade ordered out 14th July, expected to arrive by end of September.

Tsi-tsi-kar. Two days later General Orloff moved in support in the same direction, and on the 9th he reached Tsi-an Guandi.*

On 12th September General Rennenkampf reached Bodune. The Chinese garrison (1,500 men) surrendered without resistance. Two rifled guns and supplies of food, clothing, etc., were captured.

On 21st September Kwan-Chen-tsi on the railway, about 80 miles west of Girin, was reached. Hearing that Chinese troops from this place were marching to Girin, General Rennenkampf decided to sieze the latter place by a rapid cavalry advance.

Leaving 4½ sotnias with 2 batteries in reserve at Kwan-Chen-tsi and another sotnia at Dagushan (33 miles south of Kwan-Chen-tsi on the main Girin-Mukden road), he advanced with two sotnias on Girin. Before they had gone more than 13 miles, they met 500 Chinese infantry marching towards Mukden. These were disarmed and their Mauser rifles destroyed.

On 23rd September at 7 A.M. Girin was reached, General Rennenkampf and his two sotnias having done the 80 miles from Kwan-Chen-tsi in 24 hours.

The "parlementaire" sent to meet him was ordered to lead the way to the Chinese Governor's house.† Disarming any Chinese soldiers met on the way, General Rennenkampf arrived at and surrounded the Governor's house. All arms discovered were taken away and thrown into the Sungari. A patrol was sent out in the direction of Omoso to establish connection with General Aigustoff's column.

The 23rd and 24th September were occupied in disarming the Chinese troops, and occupying the forts and mint, etc. Of the forts surrounding the town, two were given up without resistance, but the third opened artillery fire on the party sent to occupy it. It therefore could not be taken over for the moment.

On the 24th a patrol of dragoons and cossacks which had come up from General Aigustoff's force took the ammunition store by assault.

Altogether 63 guns were captured in Girin.

On the 25th General Rennenkampf resumed his movement southward.

On the same day Major-General Krejanovski (in command of the cavalry force already mentioned as having been sent out by General Aigustov from Ninguta) arrived at Girin. He had seized Omoso on the 7th September, capturing 4 guns and a quantity of ammunition there. The following day (8th) the infantry,‡ sent in support, reached Omoso, and further reinforcements of infantry and artillery started from Ninguta. On the 19th September a sotnia of

* This move of Major-General Orloff appears to have been contrary to his orders, which were that his column was to furnish line of communication troops on the route by which he had advanced, *i.e.*, Khailar—Tsi-tsi-kar. The Tsar's formal reprimand has since been communicated to General Orloff and published in the official Gazette.

† This almost total absence of any resistance is explained by the fact that the Governor of Girin had received an order from Pekin not to resist. This order had reached him, through the Russian Minister for Foreign Affairs and General Aigustoff, on the 22nd.

‡ *i.e.*, 14th Eastern Siberian Rifle Regiment.

cossacks was sent out from Omoso on the Hun Chun road to establish connection with the Russian garrison there, and on the 26th, as already stated, General Krejanovski reached Girin.

On the 6th October the head of General Rennenkampf's column reached Telin, and there met the advanced cavalry of the force which had been operating from the south, to the movements of which we now turn.

(b) *Further operations in Southern Manchuria.*—By the 23rd September a force of 11 Battalions, 40 guns, 2 cossack sotnias and 4 sotnias of the railway force* had been concentrated on the line Inkou-Hai-Chen for the advance on Mukden.

There had been some difficulty and delay in providing horses for some of the units which had arrived by sea. These were ultimately obtained from Vladivostok and by local purchase.

The advance was begun on the 24th September, under the command of Lieutenant-General Subbotich, in three columns, *viz.*—

- (i) *Major-General Fleischer* (on the left).† Strength: 6 Battalions, 2 Sotnias, 10 guns.
- (ii) *Colonel Artamonoff* (in the centre). Strength: 5 Battalions, 26 guns.
- (iii) *Colonel Mishenko* (on the right). Strength: 4 Sotnias of the railway force and 4 guns.

The Chinese were said to have a force of some 2,000 infantry, 600 cavalry, with 3 guns at Laoyan, and also to be moving a strong column south towards Ahn-Shahn-Chan.

On the 24th September General Fleischer's column seized old Niuchuan, driving the Chinese troops of General Shu (about 6,000 men) out of a series of fortified villages and forcing him to retire northwards. The absence of positions from which artillery could prepare the attack, the heat, and the difficulty of moving across immense tracts entirely overgrown with coarse grass ten foot high all made this day's work a very trying one. One Krupp gun and one standard were captured by the Russians.

On the same day the centre column (Colonel Artamonoff) by order of General Subbotich pushed forward a reconnaissance (with 2 sotnias of railway troops) in advance of the general front of the three columns. It was thus ascertained that the Chinese, estimated at 14,000

* There were altogether in the southern portion of Manchuria (including garrisons of the Kwantung Province) at this time: 16 Battalions, 8 Squadrons and Sotnias, 76 guns, 2½ companies of Sappers and one siege park.

† It may be noted here that a force under General Volkov (*i.e.*, 15th and 16th Rifle Regiments=4 Battalions, ½ Sotnia, 4 guns, ½ company of Sappers) advanced still further to the left direct from Shanghai Kuang to Mukden. This column was at Shanghai-Kuang on 2nd October; its strength is additional to the numbers given in the preceding footnote, and should not be lost sight of in considering the total number of troops available (or capable of being so within a few days) in this part of the operation. It will be seen that the Russians avoided the mistake of under estimating their antagonist! The advance of this column gave the whole of the railway line Shanghai-Kuang to Inkou into Russian hands, together with the branch line to Sin-Min-Tin, which was occupied on the 13th October.

men and 30 guns, were occupying an entrenched position south of Ahn-Shau-Chan on the line of railway.

On 26th September General Subbotich attacked this position, which consisted of a line of heights, with rounded knolls. Very difficult to approach from the front, the enemy's position was further strengthened by emplacements for artillery and shelter trenches in tiers for riflemen; the right flank rested on a work on a knoll, and the left on a fortified temple. In the centre there was a salient angle jutting out in front, which was the tactical key to the position, which faced south-west and was about $4\frac{1}{2}$ miles long.

Major-General Fleischer's column was directed (from old Niuchuan) on the extreme right flank of the Chinese, with orders to turn that flank and take the position in rear. Colonel Mishenko's column was to turn the enemy's left flank. Colonel Artamonoff attacked in front, the central salient being his objective.

General Fleischer had the Chinese troops which had been driven out of old Niu-Chuan in his front and the whole of his advance had to be carried out during a running fight with these. Colonel Mishenko also soon got into touch with the enemy. The central column opened fire on the central salient at 9 A.M.; and it was then discovered that the Chinese had abandoned it, concentrating on their flanks.

General Fleischer energetically continuing his advance forced the Chinese to evacuate the height held in his front, and to retire northward. The Chinese attempted to stop the movement of Colonel Mishenko's column by moving troops supported by artillery against it. But ultimately they had to give way and retired northward. Colonel Artamonoff's column, after the artillery preparation, advanced against the centre of the Chinese position, but met no troops there.

Next day (27th September). The Chinese again attempted to bar the Russian advance by occupying the railway embankment at the ruined station of Sha Khe. At 9 A.M. the Russian right (Mishenko) came with action. At 10-30 the centre (Artamonoff) came up. Considerable Chinese forces threatened the Russian right. At 3 P.M. Chinese cavalry outflanked the Russian left and attempted to take it in reverse. They were driven off, but repeatedly renewed their attack. After artillery preparation the Russians delivered a general attack, and at 4 P.M. the Chinese were in full retreat.*

On 28th September the Chinese were occupying a line of heights in front of Lao-yan. General Fleischer moved out at 6-30 A.M. and directed his movement so as to outflank the Chinese right. Colonel Artamonoff (in the centre) moved at 8-30 A.M. by the main road, and Colonel Mishenko moved against the Chinese left.

*General Fleischer's column was given a day's halt, at his own request, after the previous three days' hard work. He was, however, ordered to move against the Chinese right, but could not come into action before 6 P.M. and therefore took no part in this day's fighting.

The Chinese guns were silenced by 10-30 and at noon the Russian centre occupied the Chinese position. At 2-30 P.M. General Fleischer's advanced guard occupied Lao-yan.

On 30th September General Subbotich made a general advance and on the 1st October reached Bai-ta-pu, 7 or 8 miles south of Mukden, without having met any Chinese troops, and bivouacked there. Meanwhile Colonel Mishenko's column re-inforced by a sotnia of cossacks and a horse battery, was sent out to reconnoitre Mukden, under the command of Colonel Artamonoff. At 4 P.M. Mukden was occupied; the Chinese evacuating it after a few shots had been interchanged. As soon as news of this reached the bivouac, six companies were immediately pushed forward and reached Mukden that night.

Next day (2nd October) General Subbotich formally entered the town at the head of his advanced guard, and the suburbs were cleared of Chinese marauders.

On the 5th, Colonel Mishenko's small force (reinforced by 4 horse artillery guns) was sent out in the direction of Telin with a view to securing the railway line as far as that place. The following day (6th) he joined hands in Telin with Major-General Rennenkampf's advanced guard which was already there.

Thus Russian forces operating from the north and south respectively, along the Port Arthur branch railway line reached Telin on the same day. It will be remembered that it was through this place that the imaginary line, dividing Manchuria into two spheres of operations, had been drawn. Thus, too, the whole of the railway between Harbin and Port Arthur was cleared of Chinese and was once more in Russian hands.

The Imperial order, for the de-mobilization of the Russian forces, was issued immediately after the occupation of Mukden (*i.e.*, on the 3rd October). Chinese troops, as organized forces, had ceased to exist; some 16 or 17 small mobile columns were sent out in various directions, but whatever minor operations took place later were in order to put down brigandage and local disturbances, and form no real part of the campaign in Manchuria.

III.—CONCLUSION AND NOTES.

The following notes, details of the forces employed, etc., have not been included in the description of the course of operations for the sake of simplicity. They are added here for reference:—

1.—*Lines of communication with European Russia.*—The terminus of the Trans-Baikal section of the Siberian railway is at Stretensk on the river Shilka. Beyond this point communication with Blagovieshchensk, Khabarovsk, etc., is by river.

The Trans-Baikal section of railway was only opened to traffic on 14th July, *i.e.*, at the time mobilization was beginning. There was a dearth of rolling-stock, and the permanent way was far from being in a satisfactory condition. The line is a single one. During the campaign up to 14th October 54,410 men, 11,407 horses, 3,000 tons of stores were carried by it.

Boats having a draught of 3 feet are not always able to reach Stretensk. A transshipment is often necessary at Pokrovskaya into vessels of less draught. There happened to be plenty of water in the Shilka at the middle of July 1900 and large Amur steamers were able to ply to and from Stretensk. The river flotilla however was insufficient and some 220 rafts and boats were built at Stretensk.

During the months—July, August and September—161 such improvised means of transport were actually despatched. On board them there were—115 officers, 15,500 rank and file, 5,650 horses and 560 tons of stores, etc.

The time taken from Stretensk to Pokrovskaya was from 6-7 days if all went well.

The river Flotilla—147 steamers and 36 barges—carried—40,000 troops, 5,000 horses and 8,000 tons of stores, etc.

Many of the river steamers were, at the beginning, below Blagovieshchensk, and could not be available until the river communication was re-established by the taking of Aigun.

II.—The garrison of Blagovieshchensk on 15th July was—

2nd Eastern Siberian Line Battalion ...	...	1 battalion.
Chita and Stretensk Regiments ...	...	5 companies.
Local Infantry :		
2nd Battery, 2nd Eastern Siberian Artillery Brigade	...	8 guns.
$\frac{1}{2}$ Battery of Trans-Baikal Cossack Division	...	4 „
2 guns on board the S.S. <i>Selenga</i> ...	...	2 „
Amur Cossack Regiment	...	3 Sotnias.
Nerchinsk Cossack Regiment	...	2 „

Total: 2 $\frac{1}{2}$ battalions, 14 guns, 5 Sotnias and a local detachment.

There were also—

- 1 Reserve battalion, with one company equipped.
- 480 Militia armed with Krink rifles.
- 670 Townsmen, volunteers.

III.—The forces sent to reinforce or relieve Blagovieshchensk were—

(a) From Khabarovsk, under Colonel Servianoff, on 18th July—

14th Eastern Siberian Rifle Regiment	...	2 battalions.
10th „ „ Line Battalion	...	1 battalion.
Amur Cossack Division	...	1 Sotnia.
4th Battery, 1st Eastern Siberian Artillery Brigade	...	8 guns.
2 Mortars	...	2 „

Total: 3 battalions, 1 Sotnia, 8 guns and 2 mortars.

(5) From Stretensk—

(1) Under Colonel Schwerin—

1st Chita and 1st Stretensk Battalions	...	...	3 companies.
1½ Battery, Trans-Baikal Artillery Division	...	...	12 guns.

Total : 3 companies and 12 guns.

(2) Under-Major General Rennenkampf—

3rd and 4th Battalions of the Stretensk Infantry Regiment	...	...	2 battalions.
3rd and 4th " " Chita " "	...	...	2 "
Argun Cossack Regiment	...	...	2 Sotnias.
3rd Trans-Baikal Horse Battery	...	...	6 guns.

Total : 4 battalions, 2 Sotnias, 6 guns and 12 bronze guns.

IV.—The columns employed in the operations in Northern Manchuria were as follows, counting from the right flank or, in other words, from the north-west :—

(1) Major-General Orloff's column, formed early in July, in Trans-Baikalia, and directed on Khailar and Tsi-tsi-kar—

3rd, 4th, 5th and 6th Cossack Battalions (Infantry)...	...	...	4 battalions.
3rd Verchneudinsk Cossack Regiment	...	...	6 Sotnias.
3rd Trans-Baikal Cossack Horse Battery	...	...	6 guns.

Reinforced early in August by—

2nd Battalion, Chita Infantry Regiment	...	...	1 battalion.
3rd " Stretensk " "	...	...	1 "

Total : 6 battalions, 6 Sotnias, 6 guns, Field Hospital and Engineer Park.

(2) Major-General Rennenkampf's column formed in Blagovieshchensk and moved on Tsi-tsi-kar.

At first this force consisted of 4½ Sotnias with 2 guns.

It was gradually reinforced during the month of August, and by the early days of September it had been brought up to the following strength :—

1st, 2nd and 4th Battalions, Stretensk Infantry Regiment	...	...	3 battalions.
1st, 3rd and 4th " " Chita " "	...	...	3 "
Amur Cossack Regiment	...	...	3 Sotnias.
1st Nerchinsk Cossack Regiment	...	...	2 "
1st Argun " " " "	...	...	½ "
1st and 2nd Batteries, Trans-Baikal Artillery Division	...	...	16 guns.
½ of 2nd Battery, 2nd Eastern Siberian Artillery Brigade	...	...	4 "

Total : 6 battalions, 5½ Sotnias, 20 guns.

(3) Major-General Sakharoff's column for the relief of Harbin—

17th Eastern Siberian Rifle Regiment	...	...	2 battalions.
3rd and 4th Eastern Siberian Line Battalions (now 18th and 22nd Rifle Battalions)	...	...	2 "
1 Battery, 1st Eastern Siberian Artillery Brigade	...	...	8 guns.
1st and 2nd Batteries, 2nd Eastern Siberian Artillery Brigade	...	...	8 "
Guns of position	...	...	10 "
Amur Cossack Regiment	...	...	3 Sotnias.
Ussuri Cossack Division	...	...	1 Sotnia.

Total : 4 battalions, 16 Field and 10 Heavy guns, 4 Sotnias, with Sapper and Telegraph detachments, Field Hospital, etc.

(4) Major-General Chichagoff's column sent out from Nikolsk—

1½ battalions, Infantry, 6 mountain guns and 2½ squadrons.

(5) Major-General Aigustoff's column which moved from Novokievsk against Hun Chun and Savelovka —

5th, 15th and 16th Eastern Siberian Rifle Regiments	...	...	6 battalions.
6th Mountain Battery	...	...	6 guns.
2nd Mortar "	...	...	6 "
1st Chita Cossack Regiment	...	...	1 Sotnia.
Ussuri Cossack Division	...	...	1 "
½ Company, Sappers	...	...	½ company.

Total : 6 battalions, 12 guns, 2 Sotnias, ½ company of Sappers.

In the early part of August the 5th and 15th Eastern Siberian Rifle Regiments were detached from this column and sent to Taku. There remained, therefore, only 2 battalions, infantry, etc.

V.—The columns which were sent out from the Kwantung Peninsula and operated in Southern Manchuria were—

(1) Colonel Khorunjenkoff's column formed in the latter half of July at Sen-yu-chen—

1st Eastern Siberian Rifle Regiments	...	...	2 battalions.
2nd Light Battery, 1st Eastern Siberian Artillery Brigade	...	...	8 guns.
Verchneudinsk Cossack Regiment	...	...	½ Sotnia.

Total : 2 battalions, 8 guns, ½ Sotnia.

- (2) Colonel Dombrovski's columns, afterwards commanded by Major-General Fleischer, formed about the same time as (1) at Dashichao—

3rd Eastern Siberian Rifle Regiment	...	...	...	6 companies.
7th " " "	...	...	...	3 "
8th " " "	...	...	...	1 battalion.
11th " " "	...	...	...	7 companies.
1st Trans-Baikal Cossack Horse Battery	...	...	...	6 guns.
1st Battery, Eastern Siberian Rifle Artillery Division	...	...	...	8 "
1st Mortar Battery	...	...	...	4 "
1st Verchneudinsk Cossack Regiment	...	...	...	1½ Sotnias.
1st Nerchinsk " "	...	...	...	½ Sotnia.
Sapper detachment	...	...	...	...

Total: 5 battalions, 18 guns, 2 Sotnias and a Sapper detachment.

VI.—The distribution of Russian troops in Manchuria on the 14th October was as follows:—

In the Tsi-tsi-kar Province	12 battalions, 24 squadrons and sotnias, 22 guns.
In reserve (at Harbin)	8 " " " " " " " " " "
In Girin Province	26 " 29 " " " " 102 "
In reserve (5th Rifle Brigade and 6th Eastern Siberian Rifle Brigade)	... 13 " " " " " 24 "
In Southern Manchuria (including Kwantung Province)	... 21 " 9 " " " " 84* "
For the defence of the Pri-Amur and Siberian frontier, and troops within these districts	... 26 " 25 " " " " 28* "

Totals ... 105 battalions, 87 squadrons and sotnias, 260 guns.

VII.—The following are some of the difficulties, which the Russians had to contend with at the opening of the campaign:—

- (a) The great distances. The length of railway to be held was some 1,300 miles, and in order to reach it very long distances had to be marched, especially in Trans-Baikalia.
- (b) Simultaneously with the advance the line of the Amur had to be secured and also the town Blagovieshchensk.

* Also a Fortress Artillery battalions.

- (c) The insufficiency of available transport on the Amur rafts and makeshift expedients had to be improvised.
- (d) The reorganization of certain units (previously ordered) by the addition of extra battalions, had to be carried out simultaneously with the mobilization and operations.
- (e) The dearth, or rather the absence, of roads. These had to be made as operations progressed--*e.g.*, that from Stretensk to Khailar; from Khaidalovo to Khailar and Tsi-tsi-kar, Harbin and Pogranichnaya. Until the work was well advanced, the transport of supplies, stores, etc., was a matter of the very greatest difficulty.
- (f) A bad harvest in Trans-Baikalia reduced the local resources available to a very large extent.

To the above difficulties and drawbacks referred to in Russian accounts, there may, perhaps, be added the obvious inconvenience and danger of operating, in a hostile country, with a number of small and detached forces. If the Chinese armed strength in Manchuria was ever anything approaching what Russian writers have estimated--*i.e.*, 100,000 men, and if they had had any sound organization or training with a capable general at their head, it will be tolerably evident, to any one who has studied Napoleon's campaign of 1814, that there were great possibilities for the defence, and that the Russian forces would have been extremely liable to defeat in detail. That this is no mere academic criticism seems to appear from the fact that, within certain limits, the Chinese fought well. They frequently either attacked in the first instance, or delivered counter-attacks with energy. At Ongun, on 30th July, the Chinese advanced to attack the head of General Orloff's column at 4 A.M.; but it was not till nearly 3 P.M. that the arrival of Russian reinforcements made it possible to drive them off. General Orloff remarks upon the discipline and good shooting of the Chinese, who were commanded by a General well known for his energy and intelligence.

Again, General Rennenkampf's position at San-Chau, on 9th August, was hardly satisfactory. He was in presence of a greatly superior Chinese force, until reinforcements coming up made it possible for him to resume his advance, on the 16th.

On the eastern side also, General Chichago's force was apparently unable to make any head-way, against the Chinese, between the 2nd and 28th August.

It almost seems as if the adoption of such a plan of campaign is alone enough to prove that, though in Russian accounts much is made of the apparent danger to the Russian Empire (apparently with a view to justifying the extensive measures taken), the Russian military authorities did not take the Chinese seriously. Though enlarging on the dangers which could only exist on the supposition of organization and intelligence, the success of the plan adopted pre-supposed the absence of both.

VIII.—*Mobilization*.—The mobilization was satisfactorily carried out.

Reservists had to travel enormous distances (in some cases many hundreds of miles) in regions without roads or means of transport before they could re-join their units. More than 100,000 reservists were recalled to the colors (in the Pri-Amur and Siberian military districts) apparently without a hitch.

The number of men failing to appear, without reasonable excuse, was less than had been expected, *i.e.*, only 19·54 per cent. Even this percentage is partly accounted for by a number of men who were actually in Manchuria, engaged on railway work, who had not reported their departure, and who could not return after the disturbances had once broken out. Of the reservists presenting themselves, 94·59 per cent. were found fit for service.

Units were fully mobilized and ready to move in many cases sooner than was laid down in the Mobilization Tables. In some cases, however, there were delays. The conveyance of these reservists and also of units by the Siberian railway and on the Amur and Shilka rivers may be considered a success. Some delay was experienced—as had been expected by those who had studied the question—in the transport of troops, etc., across Lake Baikal, owing to the transhipment necessary on both shores of the lake.

Certain minor faults discovered in the Mobilization Tables will no doubt, be made good, *e.g.*, a better choice, in some cases, of places of assembly, and a closer co-operation of the civil and military authorities.

It may be added that simultaneously with the mobilization and movement of troops the following formations, of new units, etc., were carried out:—

- 16 Reserve Battalions (8 of which, in the Pri-Amur district, had not been contemplated in the Mobilization Tables).
- 5 Mounted and Reserve Cossack Sotnias.
- 5 Remount establishments with 2,200 horses.
- 53 Base and Field Hospitals.
- 12 Artillery Parks.
- 3 Hospital ships.

It is, perhaps, worth noting that there is an almost total absence of regulations as to de-mobilization. This has been found to cause considerable delay in the de-mobilization of the troops on the conclusion of the campaign.

IX.—*The Railway Force*.—Frequent mention has been made of troops in the service of the Railway Company. It is not easy to put into English their Russian title, which if literally translated word for

word would be "Railway Guards;" and they cannot rightly be called "Railway Troops," as that again would mean a different thing.

When the "Eastern Chinese Railway Company" began laying out the line, they frequently met with opposition from the inhabitants. Armed protection was found necessary both for the railway employés and also for the line as it was constructed. This Railway Company, being—at least nominally—a mere commercial undertaking, could not be protected by Russian troops in Chinese territory. The "Eastern Chinese Railway Company" therefore had to make its own arrangements, and form a force of its own for the protection of the line and of those employed on it.

In 1897 this special protective force was formed from cossack and army reserve men, with officers, in many cases, still serving on the active list of the Russian Army. Colonel (now Major-General) Herngros was given the command with 4 staff officers under him—all on the active list of the Russian Army. At first this force consisted of 19 sotnias (mounted) and 5 companies (dismounted) of cossacks, a total of 2,500 men. On the outbreak of hostilities in Manchuria orders were issued to increase this force up to 10,000 men.

Since the campaign in Manchuria this force has been "granted the privilege" of wearing the uniform of Russian troops. Their recruiting system and organization has also been made entirely military; their equipment always was so. In short, the affectation of considering this force as a purely civil affair, if not a mere private venture, seems now to have been thrown off.

It is altogether a rather interesting little glimpse of Russian methods, and may be considered as a specimen of the evolution of a Russian force in the heart of a foreign (and friendly) country.

SOME FOREIGN ARTICLES OF SPECIAL INTEREST.

(Contributed by the Intelligence Branch.)

A LECTURE ON THE BOERS DELIVERED AT THE RUSSIAN STAFF COLLEGE.

At the Nikolævski "Academy of the General Staff" Colonel Romeko-Gurko, of the General Staff, delivered a lecture entitled "A Sketch of the Boers' Military Operations."

From the *Russki Invalid*,
17th March 1901.

This lecture had a special interest, in that Colonel Gurko was sent out to the theatre of war in South Africa last year, and spent some months among the Boers. His information was, therefore, at first hand, whereas the bulk of the news from South Africa came through British channels. Moreover, the lecturer selected his facts with skill, especially giving information as to affairs until now, but little known, or not known at all. He only referred to matters more or less notorious just so far as was necessary to explain his meaning.

Armed strength of the Boers.—The armed strength of the Boers, he said, consisted chiefly of militia (to which the whole male population belongs, between the ages of 16 and 60). The Transvaal Artillery and the Pretoria and Johannesburg Police were the only forces of the nature of a standing army. There were also detachments of foreign volunteers. The best of all the forces available were those which had received some training in time of peace, *i.e.*, the Artillery and the Police.

It was 400 men of the Johannesburg Police that compelled a British force of 1,300 men to lay down their arms at Nicholson's Nek. The foreign volunteers were practically of no use at all.

Number of men.—The total number of men put in the field by the two Republics during the war did not exceed 52,000 men; but at no time were all these under arms simultaneously.

Arms.—The Boers' armament consisted partly of Mauser rifles, partly Lee-Metfords and Martini-Henris. They had altogether some 90,000 rifles, but not more than 50 guns, of various patterns and calibres.

Commissariat and transport.—There was no commissariat or transport organization in the European sense of the word. Before starting on a march each man had to provide himself with a reserve of provisions. For every six men a heavy wagon was allowed, drawn by 6 or 8 pairs of oxen; in consequence of which every unit had a huge cumbersome baggage train.

Resources.—The wealth of the Republics is practically confined to mineral riches and to stock. Consequently all their other needs, including flour, have to be met by importation, chiefly from Europe *via* Lorenzo Marquez. The chief importers were Jews, who provided all that was necessary at a high price.

Mobilization.—The mobilization and transport of troops was carried out without a previously worked out plan. Most of the traffic was on the Pretoria-Natal line, which was capable of working 11 pairs of trains a day. But even under such conditions as these they were able to move only 8,500 men in 14 days, because of the cumbrous baggage trains.

Military system.—The highest tactical unit is the "Commando"—furnished by a neighbourhood or district—which is the administrative unit of both the Republics. A "Commandant" commands the "Commando," which is divided into smaller units under "Field-Cornets." The Command-in-Chief was exercised by a "Commandant-General," who was, during the first part of the war, Joubert. He had four "Assistant Generals" to help him. When the forces became scattered in various directions, Joubert remained in command of the troops in Natal only, and Kruger exercised the Command-in-Chief.

No staffs.—The commanders of troops had no staffs. No dispositions were given out either for a march or for an action. Moreover, there were no maps. But even so everyone knew the country and the distance between various points and districts thoroughly. On the march or in action each one knew what he himself had to do.

Boer tactics.—Not having previously carried on wars on a large scale, and remembering their comparatively easy victory over the British in 1881, the Boers worked out for themselves an original idea in the way of conducting military operations. They thought it was enough to lie behind stones, in strong positions, and beat off the enemy's attack by their fire. Active operations did not suit their cold-blooded, phlegmatic character. They saw no necessity for following up their defeated antagonist. It was not until after the catastrophe which overtook Cronje that they gradually adopted another system and began to develop "guerilla" warfare. De Wet was the first to do so, and the most successful.

Cronje's action on the Modder River.—[Colonel Gurko's lecture threw some new light on the circumstances which led to Cronje's capitulation.] Having taken up a strong position on the Modder River to the south of Kimberley, Cronje stubbornly waited for the English to attack him as usual in front. Even when he knew that the English had turned his left flank and were already getting into Kimberley, this did not disturb him. But it was acknowledged to be fatal for him that the English had driven off half his horses. If this had not happened, Cronje would have been able to retire northward and to have reached Bloemfontein by a circuitous route. But when half of his force became dismounted, he had to move due east to his base—Bloemfontein. Unaccustomed to marching on foot, the Boers moved very slowly, doing not more than 7 or 8 miles a day (and in

the course of 4 days marching altogether only 33 miles), and found themselves cut off from Bloemfontein. Then came Cronje's famous stand on the Modder, which lasted ten days. During this time all the mounted Boers managed, fortunately for them, to escape, and on the 27th February, when Cronje capitulated, less than 4,000 men, out of more than 8,000 men who had formed his original force, fell into the hands of the English.

These were the dismounted men. Thus it was not the cumbrous baggage trains, as one was inclined to think, that hampered Cronje's retirement. With these baggage trains, and even with heavy guns of position, they managed to get along very well and with great skill.

[The narrow limits of a newspaper article do not admit of even slightly touching on all the subjects of Colonel Gurko's pregnant lecture. We can only say a few words in conclusion as to the lecturer's views on the present state of things in the theatre of war.]

Though they prolong the struggle, the Boers now manifestly do not do so in the hope of beating their enemy. Their hopes are these—that the British tired of the war and convinced that the money expended on it cannot be recouped, by a long way, by the acquisition of the devastated country, will themselves put an end to the war, or propose advantageous terms with a view to concluding it. As a matter of fact, some 150 millions sterling have been expended on this war, while the value of the gold mines, which the British Government could utilize to cover its expenditure, does not exceed 50 millions sterling.

There is no possibility whatever of squeezing anything out of the population, which is ruined to the utmost. The affair evidently means a vast and entirely unremunerative loss, and this the practical English do not love.

RIFLE CLUBS OR A NATION IN ARMS.

BY CAPTAIN H. H. DOWDING, ESSEX REGIMENT.

In view of Lord Salisbury's famous speech, last year, on the formation of Rifle Clubs as a means of national defence, and the controversy which has recently been going on, in the pages of the "XIX Century," between Colonel Lonsdale Hale and Dr. Conan Doyle, anent the latter's contention that a man with a rifle is the only soldier necessary now-a-days, it is interesting to see that the same question has been occupying thinking men of other nationalities.

A long article has recently appeared in the Italian review *Rivista Militare* discussing the deductions which may, and may *not*, be fairly made from the Transvaal war as to the efficiency of untrained men for national defence.

Italy has long gone in, very strongly, for the encouragement of national rifle shooting. Any one who has travelled in the country can hardly have failed to notice the ranges of the *Istituzione del tiro a segno nazionale*, and the assembling of competitors, to be seen in almost every town of any importance on public holidays.

The writer of the article sketches the history of national rifle shooting in Italy, which dates from 1861. He reminds his readers that it was Garibaldi himself who preached the cult of *Santa Carabina*, and tells us that at the present moment there are 600 local rifle clubs, connected with the national rifle shooting institution, in active operation. Not unnaturally, in a country subject to general military service, the subject is discussed largely with regard to its bearing as a preparation for, or supplement to, the military instruction received, by the bulk of the population, during the regulation period of service in the army.

The article, however, is more directly to the purpose, for us Englishmen, where the writer expressly disclaims the idea (apparently so fascinating to many civilian critics of our army) that a man with a rifle is—a soldier, or that even good marksmanship can be accepted as a substitute for military training.

The writer of the article points out that—

"The Transvaal war has emphasized the importance and efficacy of modern rifle fire. Without taking into consideration the peculiar local conditions, most extravagant deductions have been drawn, and assertions made that good shooting is the first and *only* factor in a modern fight; that it is enough to know how to shoot the enemy, and avoid his shots, to gain the victory.....Politicians, financiers, and economists of certain schools and parties all desire a reduction of

military expenditure ; and such a consensus of political opinion on a military question is a grave danger. It is true that the news of the Boer successes struck the military world with no small surprise, and special attention was drawn to the important questions of the power of modern rifle fire and a possible superiority of the defensive over the offensive. But the idea has got abroad, among the public, that any men, without previous military training, if only they are good shots, are enough for the defence of their country.. ..

It certainly does not need much acumen to understand that in war it is useful to know how to loose off a gun and how to shoot straight. But that alone is not enough.

The enemy must be destroyed and reduced to impotence, and not only temporary but absolute impotence. The enemy will not content himself with being a stationary and passive target, and even good shooting is of no further use when the enemy is out of range and is manœuvring to force the defenders to abandon their shelter trenches and to fight under less advantageous conditions.

In this way *manœuvring* and the offensive will always have a moral and material advantage over a passive defence.

Erroneous and hasty interpretations of events in war have always been the source of grave errors. It is said : the Boer tactics have been successful ; they are entirely based on a good use of fire and on the use of fire alone. Therefore, it is argued, straight shooting alone is enough to gain the victory. Naturally extreme men, either from party politics, or short-sighted economy, add : *therefore* an army is useless in time of peace, and may be changed into nothing but a great rifle shooting association.

But go easy with such deductions !

Let us look at what happened. Leave aside the surprises which broke up certain night marches ; such surprises were few and of secondary importance, and their result was not the effect of more or less efficient fire, but of the surprise itself.

Let us consider only the real and decisive actions. The British forces were advancing by certain few, and well defined, lines, *e.g.*, the railway. They had to pass certain definite points, and at those points the Boers awaited them, like waiting for game at the end of a beat.

Speaking generally, this is what happened on the Modder and Tugela, where the line of advance crossed the rivers. Galleries were cut on the crest line of the hills, and others half way down the slope ; in the lower trenches the best marksmen were posted, and in the others the rest of the defensive force. All were well covered, buried in their trenches, and made still more invisible by the use of smokeless powder.

The British, as at Malplaquet, slowly and ceremoniously advanced on the first day ; prepared for action on the second ; deployed and attacked on the third, with much courage but little manœuvring. At the proper moments a hail of bullets struck their masses, brought

them to a stand still, and forced them to lie down, and again forced them to lie down whenever they tried to get up. And so the day passed, until under cover of darkness the British were able to get out of an unpleasant position and return to camp.

But it was not a decisive victory. If the Boers in the days when the British battalions (owing to the inexperience of their leaders and their incapacity for manœuvring their troops) were brought to a stand still under the hail of Boer bullets, had come out of their shelter trenches and fallen on the flanks of those battalions, they might have gained a decisive victory, and Cronje might now be in Pretoria instead of in S. Helena.

But one fine day Lord Roberts arrived in South Africa. He left the Boers to await him in their chosen positions, collected transport, abandoned the line of railway and manœuvred freely. He took the Boers in reverse and poor Cronje paid the penalty. Manœuvre is the necessary complement of fire, and manœuvring is learnt in the army. Though marksmanship is important, the writer does not believe in the power of individual shooting *alone*, nor in the essential superiority of the man who shoots best behind banks, natural or artificial.

Ever since war was, decisive and complete victories have always been, and will continue to be, gained by *offensive* action, inspired by intelligent chiefs, and carried out by officers and men hardened, morally and physically, and prepared for the utmost sacrifices, imposed by discipline and duty. These last two attributes are developed in an army."

The writer then passes to matters of detail, as to station rifle shooting organisation, etc., which do not concern us here.

It may perhaps be thought to be rather like flogging a dead horse to combat the theory put forward by Dr. Conan Doyle that a "brave man with a rifle" is all that is required. On the other hand, it is not without interest to see how the question strikes an "intelligent foreigner"—entirely apart from, and without reference to, opinions which have been advanced on the same subject in England—and to know what is thought in Italy, as elsewhere, of the dangerous fallacy which, if acted on, could only lead to the substitution of an immobile mob of men with arms for an army.

THE GERMAN 15-CENTIMETRE HEAVY HOWITZER BATTERY IN THE ATTACK ON THE PEITANG FORTS.

TRANSLATED FROM THE "INTERNATIONALE REVUE" BY CAPTAIN C. WANLISS, SOUTH LANCASHIRE REGIMENT.

Two 15-centimetre heavy howitzer batteries accompanied the German Expeditionary Corps to China, and one of them, under the command of Captain Kremkow, took a prominent part in the bombardment of the Peitang Forts, and it was to a very great extent owing to the accuracy of its fire that the Chinese heavy artillery was silenced, and the infantry attack rendered possible. We subjoin an account, taken from the *Neue Preussische Kreuzzeitung*, of the part taken by the German battery in the attack on the Peitang Forts—

"The battery was bivouacked at Tongku. The teams were reduced to the lowest possible minimum pending the arrival of the complete battery equipment, and there were only thirty horses with the battery when the Russians made preparations to attack the Peitang Forts. As there was no other German artillery on the spot, the heavy howitzer battery was put under the command of the Russian officer commanding the attacking forces. A good position was discovered behind the railway embankment; but as the Russians had already occupied this with their field batteries, the German howitzers were assigned a very cramped position immediately beyond the embankment, with a marsh close behind it. The position occupied by the battery itself was so marshy that platforms had to be made for the guns, by laying down stones, doors and planks, which were procured from a neighbouring village; fortunately these preparations were carried out undisturbed by the forts which were about 3,300 yards distant. After great exertions, the last of the guns was got into position just before dark: some of them sank into the ground up to the axles, and there not being a sufficient number of horses, they had to be got into position by hand.

At about 10 P.M. on the 19th September the first Chinese fort opened fire: the projectiles buried themselves in the railway embankment, behind which the detachments were sheltered, causing a cloud of dirt and stones to rain upon the men. Those in charge of the ammunition, who were on the road leading to the battery position, were more exposed, and it is a miracle that none of them were either hit or wounded by the shell bursting on all sides of them. Each Chinese shrapnel contained about 2,000 bullets.

At 11-30 P.M. the Chinese ceased fire to recommence again towards 2 A.M. for half an hour.

Whilst the German gunners thus spent the night beside their silent guns, the Russians brought three field batteries into position alongside the heavy German battery.

The last Russian gun was hardly got into position, when the Chinese artillery opened heavy fire on the allied batteries.

The German battery at once came into action, followed immediately by the Russian batteries.

The German howitzers dropped their 130lb. shell into No. I fort with the greatest accuracy, doing the greatest execution. The guns in this fort very soon ceased fire, but the artillery of the other forts still continued to keep up a well-sustained fire on the allied batteries. The German battery then directed its fire on the fort where the enemy's fire was strongest.

Whilst this artillery duel was proceeding, a message arrived from the Russian Commander-in-Chief, Admiral Alexsieff, promising the order of Saint George to the Battery Commander who succeeded in dismounting a Chinese 21-centimetre gun, whose fire was molesting the Russians. Captain Kremkow immediately directed the fire of his battery on this gun, which very soon was put out of action, thus securing for the battery commander the promised reward.

At about 9 A.M. the Chinese guns in all the forts were silenced and the infantry advanced to the attack, and very shortly afterwards the German and Russian flags were floating above all the Chinese forts.

So highly did the Emperor appreciate the services rendered by the German howitzer battery that he conferred the order of merit on its commander.

TO THE EDITOR,

JOURNAL OF THE UNITED SERVICE INSTITUTION OF INDIA,

SIMLA.

SIR,

In your journal for April you publish an article by Captain Dawson, R. V. R., containing certain strictures on the Indian Volunteer and his weapon. The article has been quoted in a military paper at home, by its Indian correspondent, and weight given to the opinions therein expressed for a reason, which, judging from the article itself, the author would be the first to disclaim.

It is a pity, I think, that statements damaging to a cause should be made, and spread abroad, without serious preconsideration, and, unless I am utterly wrong in the construction I put on the article in question, the writer starts on very eccentric premises regarding the function of the volunteer in the Empire's defence. The Government are not supposed to be getting a yearly return from the volunteers for the cost of their upkeep. The amount expended is simply an insurance premium, a retaining fee, giving the Government the right to fairly well defined services, in case such services should be required. Should we engage in a war with Russia on our northern frontiers, the Government would have to largely—very largely—depend on the moral or actual force of the volunteers for the internal peace and order of India during the campaign. The authorities probably consider that such a contingency is worthy provision, and the antidote worth paying for. In this respect the Indian Volunteer is like our transport-camel. There is no such thing (I think I am correct) as a Government transport camel, but contractors are paid so much *per annum* to keep up a supply of these animals, in case they may be wanted. The camels are mustered, and passed as fit, every month by an officer, and that they are forthcoming when required we have recent experience to prove.

As regards the training of Volunteers; nearly all *practical* military duties are commonsense paraphrased, and the man endowed with a clear head will come better through the sudden emergencies of war than one who depends on second hand theory and book-learning. The power to grasp a situation, and make the best of it, cannot be learnt from books, or the experience of other days. No two such situations are likely to be identical. (See the story of the *sangar* in the article under reference.) Such acquirements tend to make a man endeavour to fit the situation to his knowledge, rather than apply his knowledge to the situation.

The strongest argument I have yet seen in favour of volunteering is the very subject on which Captain Dawson writes, the South African War. The Boers are to all intents and purposes an army of volunteers, and they have shown what they can do towards the defence of their country. All honour to those members of the Volunteer Force

who went out to South Africa, but it was not their duty as volunteers and if they found they had much to learn, or unlearn, there, so did many others who were not volunteers, and the former were reversing their motto, defence not defiance.

There are many civil stations in this country miles away from any cantonment, and even from railway communication. The safety of these in cases of riot and rising is entirely dependent on the handful of volunteers living there, and neither increased artillery, nor harbour defences, would compensate the Europeans living there in "splendid isolation" for the abolition of the volunteer.

Now a word as to our weapon. A song, lately very popular at home, had for its title "the man behind the gun," and I can assure Captain Dawson that that same title affords a clue as to the weak point in the Martini-Henry rifles served out to us.

I know the volunteer who never will come to the range because "it's no good shooting with old gaspipes," and I have been solemnly assured by many that weapons of my own corps are capable of swallowing a bullet, dropped in at the muzzle, with a rattle terminating in a clatter as it falls out at the breech. I have seen every weapon in the corps gauged by the Chief Civil Master Armourer, Mr. Brander, who very kindly spent a long time over the experiment, using gauges of various diameters with the result that each rifle or carbine was found to be within a microscopic measurement of its original bore—*original*, not regulation. Needless to say my informants are not usually to be found on the range. I also know the man who won't join the volunteers because he is waiting till we get the '303 to do so!

I would earnestly direct the attention of all those, who don't think the Martini-Henry rifle a sufficiently good weapon for our purpose, to the seventh (the current) annual report of the Indian Volunteer Rifle Association. It will be a revelation to many. Particularly would I draw attention to the report of Match XIII "The Championship," the averages made therein, and the number of rounds fired to secure those averages. These figures form an incontestable proof, and are above argument; no amount of talking, or writing, can carry weight against them. We volunteers are not called on to fight in the open veldt, our work would be nearly all in towns, or in enclosed country, and at short range, at which the Martini-Henry bullet will hold its own against a humanitarian '303 projectile.

The following scores made at Cawnpore last drill season are interesting. The shooting of the East Surrey Regiment (second out of the whole Army, at home or abroad, for the Queen's Cup) is well known. The Cawnpore team do not possess '303 weapons, but borrowed them for the occasion, so their shooting was certainly due to their practice as volunteers with Martini-Henry rifles. Each team consisted of ten men, and out of the 30 only two (members of the

Cawnpore team) used Martini-Henry rifles. These two made the two highest totals, 94 and 92 :—

	200 yards.	500 yards.	600 yards.	Total.	Remarks.
Cawnpore Volunteer Rifles ...	289	299	284	872	Winners on the tie.
East Surrey Regiment ...	302	312	238	872	
Oude Volunteer Rifles ...	300	304	242	846	

I am not for a moment arguing that our present system of training and volunteering is perfect, but we want encouragement not discouragement. A simple subtraction sum in years, giving the answer 44, furnishes an insuperable argument in favour of volunteering in India, 'lest we forget,' which we English are always ready to do. The ordinary civilian out here is absolutely apathetic in peace time as regards volunteering, and seizes but too gladly on any excuse to refrain from qualifying for his share in the Empire's defence. I write this letter in the hope that such patriots will not be able to quote Captain Dawson as an additional excuse, and to defend those, who give up most of their leisure and a good deal of money, from the highest of motives from being looked upon as "expensive shams."

Yours faithfully,

ARUNDEL BEGBIE, *Captain,*

Adjutant, Cawnpore Volunteers.

TIPS FROM A CAMPAIGNER.

TO THE EDITOR OF THE "ARMY AND NAVY GAZETTE."

SIR,—As reinforcements are still coming out to this country, and as reliefs will continue to be sent out for some time, I venture to think some hints as to what to bring with them may not be amiss to some of your readers who find themselves under orders for the front in South Africa. I know a year and a half ago when I was ordered out here with my regiment, I should have been very thankful for a few friendly hints as to what I should require in the field, and I know now how much many of these things would have added to my comfort during the early part of the war had I been able then to procure them. From time to time I have jotted down "things that I was in want of" in my field service notebook, and I now offer them to you *pro bono publico*.—

(1) A good waterproof cape to go over everything and to reach down to the middle of the calf. Always carry this on your belt, or saddle, if mounted; it will save you from many a ducking, as when it rains in South Africa it does the thing properly!

(2) A soft squash hat, any pattern, as when living on a kopje sealed pattern uniform is not *de rigueur*!

(3) A walking stick, most useful for poking about over the stones and after your sentries at night, and will probably save a sprained ankle. I have got a stick now which went through three actions, either carried by me or by my stretcher bearer.

(4) Thick pair of cord breeches, laced not buttoned, a dark shade of colour the best, though they will soon grow that colour.

(5) One suit of khaki serge, coat and trousers.

(6) One or two drill khaki coats, with thin cord breeches, or knickerbocker breeches.

(7) A cardigan waistcoat with sleeves. When these articles were sent to my regiment it was about the month of March, and we were in the plains. I wrote to remind my friends that we were in the tropics, and not at the North Pole; but three months afterwards, when on a berg in the Transvaal, I was sorry I had written that letter.

(8) A pair of knitted gloves. These could not be bought in Natal for love or money last cold weather, and I have seen men marching in the morning with socks on their hands to keep off the cold.

(9) A Jaeger sleeping cap. The knitted ones let in too much wind in the high altitudes.

(10) A pair of flannel pyjama trousers. Take up very little room,, and are much more comfortable than trousers to sleep in, and if of a dark grey or khaki colour do very well to turn out in if attacked or alarmed at night. As long as you can turn out quickly generals don't much care what you turn out in as long as you are there.

(11) A pair of gum boots. Most useful to wade about camp in on wet days, or to turn out in quickly at nights, with the aforementioned pyjamas.

(12) A valise of Willesden canvas, with the piece which folds over made some 18-in. broader than the valise itself, otherwise it won't cover you over when you are in bed.

(13) A Jaeger sleeping bag and a spare blanket, or if you are corpulent I would say three blankets and no bag, as my stout friends find a difficulty in turning over in it.

(14) A pillow to go with the valise—hair not wire.

(15) A big Willesden canvas waterproof sheet, not less than 9ft. by 6ft. or else a D'Arcy sleeping tent.

(16) A Willesden canvas kit bag, with handle and padlock. (*N. B.*—I am not an agent for the Willesden Canvas Company, but the white-ants don't like it, and consequently I do).

(17) A good camp candle lantern or a bull's-eye for candles, but not a folding lamp, and get thick glass sides and not talc.

(18) A camp stool or chair of the "X" furniture pattern.

(19) An "X" pattern bed.

(20) Ditto for bath and wash-hand basin. (*N. B.*—No advertisement.)

(21) Good large havresack, made of waterproof canvas.

(22) Get a coat, British, warm, Indian pattern, from the Ordnance Department, when you arrive in this country; they are splendidly warm, and only cost you 12s. 9d. instead of the many pounds your tailor might see necessary to ask you.

(23) An aluminium water-bottle, with a cup either to fit on or to hook on to it. Any enamelled cup does.

(24) A Sparklet is often a comfort. Get a metal one. They are stronger than the glass ones.

(25) A small canteen for one, fitted with a couple of plates, small kettle, knife, fork, and spoon, will be found very useful when out bivouacking with your company, and with an extra plate will do for two. A small tin for tea, another for sugar, and one for salt should be included.

(26) A tin or two of tea tabloids and some saccharine will be found most useful on the trek, especially if you find yourself put on quarter-grocery rations.

(27) A tin or two of Brand's, or somebody else's, meat lozenges are useful; but not too many as a little goes a long way with them. Some chocolate cakes in small $\frac{1}{4}$ lb. air-tight tins, and above all, some Maggi (not the improved Maggi) soup. These are all small

things, not down in Lord Wolseley's pocket-book certainly, but will add very much to your comfort.

(28) A few simple medicines like chlorodyne, Homocea, quinine tabloids, and Beecham's will probably cure you and your company of most of your ailments; but, failing them, try the doctor.

(29) A pair of wire nippers. I have known a man's life saved by having a pair; or, at all events, they saved him from being made a prisoner. This country is full of barbed wire and ant heaps.

(30) Last, but not least, a pair of Zeiss field-glasses; they are worth more than a revolver as a life preserver.

Now, Sir, I must, I think, end my somewhat lengthy list of tips. Young officers must not go away with the idea that all these comforts can be got into the regulation 40lbs. as it can't be done; but they can be left at the base and drawn on as required. And though now most of these things can be bought in the large towns of South Africa, it comes cheaper to get them before starting, and, therefore, have them at hand. I only hope that some of my tips will be of service to my brother officers, as I should then feel that my list had not been kept in vain, or my field service note-book put to a wrong use.

CAMPAIGNER,

Utrecht, Transvaal, April 3.

NOTICES OF BOOKS.

Major J. Hume Balfour, 13th Bengal Lancers, has just published a useful little book called "Field Day Examples with Notes and Maps" which should prove of value to officers presenting themselves for the examination for "Tactical Fitness" or for "C. and D."

Prize Essay Gold Medallists.

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 1879.....ST. JOHN, Maj. O. B. C., R.E.
 1880.....BARROW, Lieut. E. G., S.C.
 1882.....MASON, Lieut. A. H., R.E.
 1883.....COLLEN, Maj. E. H. H., S.C.
 1884.....BARROW, Capt. E. G., S.C.
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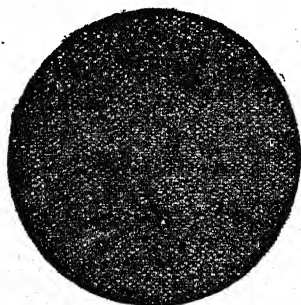
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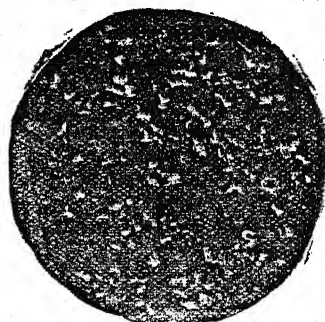
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Members proceeding to England on leave, who wish the Journal to be forwarded to them while absent from India, should inform the Secretary, and arrange for the postage.

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Sergeants' Messes and Regimental Libraries, Reading and Recreation Rooms can obtain the Journal on payment of the annual subscription (Rs. 5) only, but cannot be life members.

When a member joins the Institution on or after the 1st October, having paid his first annual subscription, he will not be charged a second subscription on the following 1st January, but it will become due on 1st January of the second year.

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3. Anonymous contributions under a *nom de plume* will not be accepted nor acknowledged; all contributions must be sent to the Secretary under the name of the writer, and the paper will, if accepted, be published under that name unless a wish is expressed for it to be published either under his initials only or anonymously. The Executive Committee will decide whether the wish can be complied with.

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6. Unless the contributor states at the end of his paper that he wishes "it published complete, or not at all, the Executive Committee of the Council will make such alterations in it as they deem necessary.

7. Contributors will be supplied with twelve copies of their papers *gratis*, provided they apply for them before they are in the press.

8. Manuscripts of original papers sent for publication in the Journal will not be returned to the contributor unless he expresses a wish to have them back and pays the postage.

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MILITARY HISTORY: the highest marks ever given were obtained by one of our pupils and
on another occasion full marks were obtained for the "Special Campaign" paper.
For this Captain James prepares every year a pamphlet as soon as the campaign is
published in Army Orders. In the last four years the 1st place has been taken
three times.

IN MATHEMATICS, another important subject, full marks were won in one of the papers
in 1898. Ten firsts, Ten seconds, eight thirds have been taken by our pupils.

GEOGRAPHY as a separate subject was instituted in 1895, the first place was taken in '95,
'97 and '99. We have Special Geography notes which can only be obtained by those
who read with us. Three firsts have been taken by our pupils.

The above results are far in excess of the results obtained by any other establishment.
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campaign and other subjects, and with information as to how best to read for
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AUGUST, 1900.

At this Examination TEN only Passed on the Competitive List owing to the War in South Africa, and
of these the following SIX PASSED from us:—

Capt. C. G. Stewart, D.S.O.	...	...	Royal Artillery.
Capt. R. F. G. Bond	...	...	Royal Engineers.
J. R. Chancellor, Esq., D.S.O.	...	...	Royal Engineers.
Capt. R. F. Uistacke	...	...	Royal Inniskilling Fusiliers.
Capt. H. W. R. Senior	...	...	Indian Staff Corps.
Capt. C. Rattray	...	...	Indian Staff Corps.

The following SIX, who read with us, also received NOMINATIONS:—

Capt. J. S. Cayzer	...	...	7th Dragoon Guards.
Capt. J. Vaughan	...	...	7th Hussars.
V. R. Brooke, Esq.	...	...	9th Lancers.
A. Symons, Esq.	...	...	13th Hussars.
Capt. J. A. S. Tolloch	...	...	Royal Engineers.
Capt. G. Meynell	...	...	1st Batt., Shropshire Light Infantry.

And, in addition, the following QUALIFIED:—

Capt. G. McK. Franks	...	...	Royal Artillery.
Capt. W. K. Scharlieb	Indian Staff Corps.
Capt. L. A. Watson	Indian Staff Corps.
S. W. King, Esq.	Indian Staff Corps.

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COMPETITIVE	One hundred and forty-one.

These numbers are far in excess of those passed by any other educa

JOURNAL OF THE

UNITED SERVICE INSTITUTION

OF INDIA.

Published under the authority of the Council.

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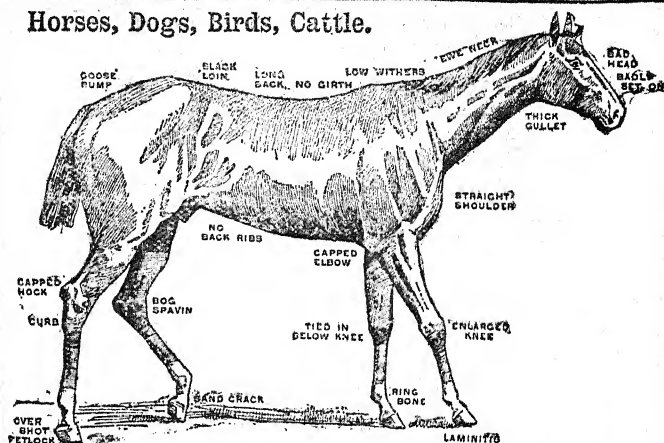
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October 1901.

CONTENTS OF SOME MILITARY JOURNALS RECEIVED BY
THE INSTITUTION. THEY ARE AVAILABLE TO MEM-
BERS ONE MONTH AFTER RECEIPT IN INDIA.

Journal of the Royal United Service Institution, June 1901 :— Nelson relics. Our food supply in time of war, and Imperial defence. The capture of the Taku forts. The South African war of 1899-1900, translation. *July :—*New French battle-ship *Gaulois*. Lessons to be derived from the expedition to South Africa in regard to the best organisation of the land forces of the Empire. Some impressions of the war in South Africa. The South African war of 1899-1900, translation. General staff duties. *August :—*Rare bronze medal presented to Field Marshal Viscount Molesworth. National defence. The native question in South Africa. The canteen question. The South African war of 1899-1900, translation. The execution of the field defences of London. The Elswick battery in South Africa.

*The United Service Magazine, July 1901 :—*Sir R. Calder's action, July 22, 1805. Naval dockyards and the advantages of Milford Haven. A view of the navy personnel from within. Guerilla or partisan warfare. Musketry and discipline. Musketry practice. The adventures of a convoy. An outpost of the Empire. Men and machinery. Modern military training. A dozen military epigrams. *August :—*The attack at Trafalgar. Henry VIII's Lord High Admiral. Notes on the evolution of infantry tactics. Guerilla or partisan warfare. Suffrage and service. Some operations about Slinger's Fontein. Tactical training in the British Army. Ruminations of a regimental officer. The complete kit of the infantry officer. The loss of Capri in 1808. War and assurance. *September :—*Naval reform. A Fin-de-Siecle tragedy; or, the death and burial of seaman-ship. Guerilla or partisan warfare. Notes on the evolution of infantry tactics. The decay of British rule in India. Future famines in India. Battalion organisation and battle training. The artillery duel. Cavalry scouting. The Swiss army of defence. Chess and war game.

*Proceedings of the Royal Artillery Institution, May and June 1901 :—*The automobile and its possible uses for military purposes. The training, organisation and equipment of companies of the Royal Garrison Artillery with medium guns and howitzers, and their tactics in future field operations. The Dickson memoirs. Air condensers.

Journal of the Military Service Institution, July 1901 :— Artillery organization. Clothing and equipment. Meat ration in the tropics. The Negro volunteer. Visit of the allies to China. Campaign in Orange Free State.

Journal of the United States Artillery, May—June 1901:—
 Fire control and fire direction. Automatic sighting as applied to sea-coast artillery fire. An isthmian canal from a military point of view. The 16-inch breech-loading rifle. The development of the Krupp Field Artillery material, translation. *July—August:—*
 Organization of the Field Artillery. Sights for direct fire guns. The Spanish defences of San Juan, Porto Rico. The development of the Krupp Field Artillery material, translation. The 16-inch breech-loading rifle. The study of sea-power, translation. Experiments in illustration of the top motion of rotating oblong projectiles.

Other Journals received by the Institution—

Journal of the Royal Geographical Society, June, July and August.

The Royal Engineers Journal, June, July and August.

The Indian Medical Gazette, July, August and September.

The Imperial and Asiatic Quarterly Review, July.

Blackwood's Magazine, July, August and September.

The Monthly Review, July, August and September.

The Journal of the Asiatic Society of Bengal.

The Strand Magazine, July, August and September.

The Review of Reviews, London, June, July and August.

The Review of Reviews for Australasia, June, July and August.

The Indian Review, June, July and August.

The Indian Volunteer Record, fortnightly.

Revue de Cavalerie, June, July and August.

Revue du Cercle Militaire.

Militär Wochenblatt.

Memorial de Artilleria, May, June and July.

Schweizerische Zeitschrift für Artillerie & Genie, June, July and August.

Internationale Revue über die gesammten Armeen und Flotten, June, July and August.

Arms and Explosives, June, July and August.

Indian Engineering, weekly.

Army and Navy Journal, New York, weekly.

The Broad Arrow, weekly.

The Army and Navy Gazette, weekly.

United Service Gazette, weekly.

Military Mail, weekly.

The Pioneers.

The Civil and Military Gazette.

The Englishman.

The Morning Post.

The Indian Daily Telegraph.

The Indian Daily News.

The Times of India, weekly.

The Madras Weekly Mail.

Bombay Gazette.

Indian Daily Weather Report.

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The Council have chosen as the subject for their Gold Medal Essay for 1902 the following :—

The training and equipment of Cavalry and Mounted Infantry in India and their respective rôles in War.

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- (3) When a reference is made to any work, the title of such work is to be quoted.
- (4) The Essays are to be strictly anonymous. Each must have a motto, and enclosed with the Essay there should be sent a *sealed* envelope with the motto written on the outside and the name of the candidate inside.
- (5) Essays not received by the Secretary on or before the 1st March, 1902, will not be accepted.
- (6) The Essays will be submitted for decision to Referees chosen by the Council.
- (7) The name of the successful candidate will be made known at the Annual Meeting of the Council in May or June, 1902, and his Essay will be printed in the Journal.
- (8) All Essays submitted are to become the property of the United Service Institution of India *absolutely*, and authors will not be at liberty to make any use whatsoever of their Essays without the sanction of the Council.

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OCTOBER 1901.

List of Books added to the Library during the last quarter.

SUBJECT.	Author.	Date.
Life of Hodson of Hodson's Horse ...	Trotter, Captain L. J. ...	1901
The Coming Waterloo ...	Cairnes, Captain ...	1901
The Chachnamah, an Ancient History of Sind.	Mirza Kalichbeg Fredunbeg ...	1900
Notes on Reconnoitring in South Africa...	M., R. C. ...	1901
Hints to Travellers, 2 Volumes ...	Royal Geographical Socieity ...	1901
Small Wars ...	Callwell, Major C. E. ...	1899
Manœuvre Orders ...	Trench, Major F. ...	1899
Manual of Military Engineering ...	Official ...	1901
Trooper 8008, I. Y. ...	Peel, Hon. S. ...	1901

The following Books were kindly presented to the Library :—

SUBJECT AND AUTHOR.	Presented by	Date.
A Catalogue of Books relating to the Military History of India, by M. J. D. Cockle.	The Author ...	1901
Field Day Examples with Notes and Maps (3 copies), by Major J. H. Balfour.	" ...	1901
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The Journal

OF THE

United Service Institution of India.

VOL. XXX.

OCTOBER 1901.

NO. 145.

NOTES ON MOUNTED INFANTRY.

BY CAPTAIN H. H. F. TURNER, 2ND BENGAL LANCERS.

Few who served with our mounted infantry at the commencement of the war in South Africa could fail to be struck with the fact that the whole idea was in an experimental stage. Whether it was the equipment he should carry, the saddlery he should use, or indeed the *rôle* he was to fill, there was an uncertainty about the mounted infantryman's destiny which undoubtedly reacted upon his efficiency as a mobile, and most indispensable, portion of the fighting machine.

That he and his officers rose superior to the difficulties which encompassed them, difficulties in appreciating and carrying out a *rôle* for which they had been either most superficially trained, or in most cases not trained at all, in addition to difficulties associated with want of practice in riding, ignorance of the fitting of saddlery, feeding, shoeing and the like, reflects so much the more credit on a branch of the service which has done such excellent work, and without which a successful campaign against the Boers would have been well nigh an impossibility.

The mounted infantry has learnt much in the present campaign, and by dint of rough experience, turned to account by the keenness and goodwill of all ranks, has become undeniably a most efficient and valuable portion of the field army. The gaining of efficiency from the chances of a campaign, however, is a costly and dangerous experiment, which we cannot afford to risk on a future occasion, and to which we should never again have cause to resort if the vast mass of comment, criticism, and suggestion which the war in South Africa has called into being bears any fruit. A few recollections of the most striking points which came to the writer's notice whilst serving with mounted infantry at the Cape, may not be devoid of interest, and possibly tend to indicate some of the pitfalls which impeded progress at the commencement of the campaign.

The initial difficulty experienced by most commanding officers whose battalions had been warned for service, and whose instructions included the raising of a company of mounted infantry, was to find officers and men who had undergone the Aldershot training or gained experience elsewhere. The supply was from various causes, chief amongst which was the fact that men in sufficient numbers had never been trained, quite unequal to the demand. As regards the officers a captain or major of sporting proclivities, fortunately by no means a *rara avis* in our line battalions, was asked to command the company; and subalterns of like tastes were selected to act under him. They were the best raw material in the world, with their hearts in the work as the event has proved, but in few cases had they any experience of mounted infantry, or any knowledge of its rôle in a campaign, while as regards saddlery, shoeing, and horse management generally, some of them knew as much as does the ordinary hunting man in England, who leaves the charge of his stud to his groom, so long as he gets his average number of days with hounds a week, their shoeing to the farrier, saddle fitting to the local saddler, and his horse in the hands of the nearest veterinary surgeon when anything happens beyond the resources of the groom to remedy.

To leave what one does not thoroughly understand oneself, unre-servedly to those who do, is an entirely sound policy under certain circumstances, but some difficulty arises when one is planted on the veldt with one hundred odd horses of all breeds and constitutions, all shapes and tempers; some are suffering from sorebacks, girth and rope galls, and the other innumerable mishaps of the march and camp; some have brushed, others have colic from unaccustomed food, and unskilful management, and many require shoeing, and in spite of all, the company must get forward and bear its part in the work of the column.

Non-commissioned officers and men conscious of their own inability to mend matters look to the officer to help them out of the difficulty, and judge his value by the way he copes with it.

In one case when the sorebacks alone in one section of a mounted infantry company had risen to 17 out of 30 after a few days' work, the subaltern in charge attributing the trouble to defects in the stuffing of the panels, set himself to completely restuff his saddles during a temporary halt, with the aid of an equally keen and equally inexperienced non-commissioned officer. Now it takes an expert to restuff a saddle, with suitable appliances, and nothing is so difficult to locate in the majority of cases as the seat of the cause of injury in tree or panel. It is so easy to make a depression in one place at the expense of a lump in another. The state of the backs of that section were enough to make the heart sick for many weeks afterwards.

On another occasion on the departure of a column, mostly composed of mounted infantry, into some rebel districts in the colony, it was privately announced that the expedition, for which the force was intended, would probably be over in three weeks. The staff officer, looking over the impedimenta before starting, considered one vehicle overloaded and after hunting about for some time in search of something to discard, came upon the field forge, farrier's tools, and

spare shoes. On ascertaining from the captain of the company that in accordance with a recent order all the horses had been newly shod, with the remark that as the raid was to last but three weeks no reshoeing would be necessary, he sent the farriery implements overboard. The first day's march over the rocky veldt proved the fallacy of his prediction.

The field veterinary chest next attracted attention, and was discarded, with the observation that horse medicines were only a danger in the hands of those who did not understand their use. Whether this argument was a sound one under the circumstances may be a matter of opinion, but that mounted infantry officers should be sufficiently well acquainted with elementary remedies to be able, in the absence of a veterinary surgeon, to treat the simpler cases which multiply as a campaign progresses, will be generally conceded. Should it not then be a condition of service with mounted infantry that officers and, so far as possible, non-commissioned officers should undergo a class of instruction, not in equine anatomy or the circulation of the blood, nor in neurotomy or castration, but in the rudiments of fitting saddlery, farriery, horse management, and veterinary first-aid to the sick and injured.

Watering immediately after morning feed was the rule in some companies because the water was warmer then, and the sun well up, besides the habit was a convenient one, the cases of colic undoubtedly caused by the practice being put down to other reasons.

Horse management, shoeing, fitting saddlery, and similar subjects enter so constantly into the ordinary routine life of a cavalryman that he involuntarily picks up the essentials of each, but during their brief training mounted infantry officers have little opportunity of acquiring what is so vital a portion of their profession.

The point has been constantly emphasised that mounted infantry are infantry, temporarily conveyed by various vehicles to the point at which their utility commences, when the said modes of conveyance being no longer required, are discarded; that study of the characteristics and requirements of such minor accessories is not only unnecessary, but may be prejudicial, as tending to divert the infantryman's attention from his own all-important duties and to divide his interests between his rifle and his conveyance to the detriment of the former.

This theory may be tenable when wheeled vehicles are temporarily employed, with individuals immediately responsible for the care of the animals and the repair of the carts, but that is not the situation with which we are concerned.

There may be two kinds of mounted infantry—temporary and permanent: by the latter is meant troops who throughout a campaign are designed to march mounted and fight on foot, who are dependent on the animals which carry them for their mobility, and their utility in the capacity in which they are present in the field.

The members of a cyclist corps are especially instructed in the care and requirements of the machine on which their peculiar rôle is

dependent, and in simple methods of remedying injuries and defects which may at any time occur, in the absence of expert aid.

The skill and celerity with which the C. I. V. cyclists repaired the multifarious injuries, caused by the state of the tracks in South Africa, was a lesson in handiness and resource. To the want of knowledge and experience in connection with the mounted *rôle* of the mounted infantryman, must be largely attributed the vast wastage in horseflesh sustained during the present campaign, and the want of mobility in the face of a most mobile foe, amounting not infrequently to utter inability to move. This may be regarded as labouring a point which amounts to a truism, but in the face of instances like that of one section of mounted infantry ordered to raid across the Orange River and capture a noted rebel and his stock, being able to place but 6 sound horses on parade out of 35, 18 of which were serious cases of soreback, it would seem that the importance of the instruction of the mounted infantryman, to a practical extent, in the essentials of his horse's welfare can hardly be overrated.

Excessive grooming on service breaks the men's hearts to no purpose ; a rub over in the morning before saddling up and a careful grooming and inspection on arrival from the march is all that is required to keep horses in health.

All the niceties of the riding-school, resembling as they do so much in these days the tricks of a hippodrome, may be safely eliminated from the training of the mounted infantryman's cob. A decent hack, quiet under fire, and easy to lead, is all that is required.

Similarity of seat and the skill of the cavalryman in the saddle are superfluous for the mounted infantryman, whose *rôle* is not to fight mounted. He must aspire to be the handy man of the army, and whether stiffening and supporting the cavalry in their duties in advance or rear of the main columns, or executing turning movements against flanks or rear of the enemies' position, whether covering the advance or protecting the retreat of his comrades, the *rôle* of the mounted infantryman is second to none in attractiveness and chances of distinction, and there should be no difficulty in obtaining the best material for the purpose, and no half-heartedness in training it adequately and thoroughly.

That the average officer selected to serve with the mounted infantry was on the whole suitable, though inexperienced, is undoubted ; that the class of non-commissioned officer and man was the best available is open to question. Once the supply of trained mounted infantrymen from colours and reserve was exhausted, the balance had to be found from the battalions concerned, and for a variety of reasons was not always the best material. Captains naturally enough did not encourage their best men to leave their companies, quite the contrary, nor did they readily part with the non-commissioned officers in whom they had most confidence.

The remark has been more than once passed with reference to certain offending individuals, that nothing more could be expected

from so and so as he only came to mounted infantry to get away from his captain or the non-commissioned officer of his section, or because too lazy to walk, neither motive being of particularly good omen for his success as a mounted infantryman.

Then again the wrong stamp of man was so largely enrolled. The mounted infantry soldier should be far more of the type of the artillery driver or the Hussar: young, light, active, and wiry, whereas in one company 75 per cent. were reservists; fine specimens of their class it is true, but averaging in weight rather over than under twelve stone as they stood. Many of them men who had been for some years drawing good salaries as factory employés, working as quarrymen, miners and the like; who were no longer very young nor very active, and who as a rule knew nothing of mounted infantry.

It was not an encouraging task to set to work to teach them from the very beginning the varied duties of the mounted infantryman: skill and rapidity in mounting and dismounting, sufficient familiarity with the saddle to be sure of being able to stay there at any pace across a rough country, combined with all the steadiness, alertness and activity of the light infantryman, when the manœuvring phase was at an end and the fighting was to begin.

That the battalions were so flooded with reservists is generally admitted to have been due to the large number of immature "specials" of wretched physique, whom it was necessary to weed out and replace from the reserves before the regiments could be made up to strength and sent on service.

The result of the unsuitable physique of many of those selected for mounted infantry was what might have been anticipated, *i.e.*, considerable want of mobility as a mounted force, and of activity on foot. Ponies frequently underfed and overweighted with heavy riders, rifle, ammunition and ample kit, just able to carry their load along the line of march, but incapable of performing the trying scouting and advanced guard duties which so frequently fall on the mounted infantry, through the lack of cavalry, without exhaustion and eventual collapse. Man and horse arriving at the end of their day's march overtired (and nothing is more fatiguing than kicking a tired mount along a heavy track), with neglect of the horse's well being as a result, and in so many instances, from sheer weariness, the unintelligent performance of those duties on which the safety of the camp depended.

In the frequent races with the active Boers for koppies of value to both sides the heavy men soon fell behind, with the consequence that the officer was supported by a mere handful of his company at a juncture when speed to gain the vantage-ground before the enemy, was only equalled in importance by the possession of sufficient force to hold it when attained.

The mounted infantryman of the future, and everything points to the growing importance attached to his rôle both in European armies and our own, must be a professional mounted infantry soldier, not a

charce man lassoed at a venture from amongst the rest, hardly realising for what he has let himself in, and ready to grumble whenever the unaccustomed *rôle* seems irksome.

Whatever the system eventually decided on may be, he must be thoroughly trained to start with, his training annually renewed and his efficiency not allowed to rust. The benefit which bodies of mounted infantry would derive from participation in the cold-weather concentrations in India can scarcely be over-estimated.

There appear to be many difficulties in the way of specially enlisting mounted infantrymen and training and maintaining them as a distinct branch of the service, amongst which that of expense is itself alone prohibitive.

That anything should be done which tends to dissociate the mounted infantryman from his fellow infantryman on foot is obviously most inadvisable, but so long as the former views his mounted comrade somewhat in the way the slow passenger regards the express, and the cavalryman cannot divest himself of a certain amount of suspicion, even apprehension of the interloping hybrid, his growth will be a plant tardily and laboriously reared under adverse circumstances. Arrange the buffers as we will, the ultimate shock and strain of the fight must fall upon the soldier on foot as of old. Without the cruisers, the destroyers and gunboats the fleet would be as a blind man, but it is the weight and power of the battleship which must ultimately decide the day, and hold or yield the command of the sea.

We are too prone to come to hasty conclusions on the basis of our most recent experiences without adapting them to the probable conditions of future campaigns. Were there any reason to suppose that we should be always engaged in warfare with Boers, or similar mounted guerillas, in a country resembling the present theatre of war, the argument might perhaps be maintained that good mounted infantry were of more value than cavalry for the purpose, though it may with even more reason be argued that the duration of the present operations is mainly due to the lack of troops possessing the efficiency in the mounted *rôle* which cavalry alone possess.

The frequent surprises and mishaps suffered, not as a rule by the cavalry, may be traced to the want of skilled reconnoiterers of that arm; the ease with which the Boers slip through our fingers, guns and all, when pushed from their positions, points unmistakeably to the lack of cavalry in one of its most effectual *rôles*, that of pursuit.

The argument that mounted infantry can ever take the place of cavalry appears too futile to be worth contesting at length.

The more one sees of the infantryman mounted, the more one studies the varied duties incumbent on the cavalry, the more clearly does one realise that a professional horse soldier trained on entirely different lines to those suitable for the combatant on foot, is the only person to whom we can look with confidence for the successful execution of those duties.

But there is a distinct and important *rôle* for which mounted infantry are better suited than cavalry, and by which the latter are freed

for their most harassing and important duties as the eyes and ears of the army. The escorting of artillery is a portion of that *role*, measures for the immediate security of columns on the march, and the furnishing of the mounted patrols of the outpost line; the seizing and holding of points securing the retreat of the reconnoitring screen, or commanding the line of march, are all duties in which mounted infantry may supplement cavalry, in addition to those for which their mobility so peculiarly fits them on the field of battle itself.

The rifle with sidearm, and the best of its kind, is of course the weapon for mounted infantry, although the carbine had its advocates owing to its lightness. From the nature of their duties mounted infantry are so liable to become, at all events temporarily, isolated and cut off from support, that there can be no question that the arm with which they are provided must be of the most effective type.

For much the same reason no soldier should be enrolled who is not at least a first class shot. For mounted infantrymen, even more than for others, it would seem desirable that musketry training should take the form of snapshooting at objects temporarily visible in varying positions, representing a man's head and shoulders.

The accuracy of the modern firearm has converted the taking of cover from a desirable precaution into a necessity to existence, and thus the solemn posing before a stationary object, half the size of a house, whilst the soldier with bated breath, draws a bead on the bullseye at a known range, and is given two points for missing, by two feet, the mark he aimed at with so much deliberation, has rightly been relegated to limbo except for the youngest recruits.

It was their marvellous aptitude for judging distance that rendered the marksmanship of the Boers so effectual.

Surely the absence of any artificial guide to aid the rifleman's estimate of distance on service is the best argument for its abolition on ranges in peace-time.

Snapshooting at an object momentarily emerging from the concealment of stone or bush, or showing but long enough to deliver a shot over the edge of rock or trench, when to fail to hit counts nothing but a shot thrown away, and one more chance to the enemy to drop his man, suggests a similar preparation in peace-time whether designed to meet the Boers, the frontier tribesman, or the scattered riflemen, of a European army. Of course much has been done in this direction, and our musketry training in recent years has been progressing on practical lines based on careful study of our experiences in recent campaigns.

As much can hardly be said of our progress in the development of mounted infantry; the drill-book is neither clear nor complete and might indeed be read from cover to cover without conveying any real idea to an ordinary intellect of the duties and possibilities of mounted infantry. Whilst such words of command exist as "For dismounted duty, prepare to dismount, and stand in front of your horses," to quote but one example, the drill would seem to lack something in terseness and simplicity. The manœuvring as a troop at close

order, which appears so fascinating a feature of the ordinary mounted infantry training, appears not only unnecessary, but even harmful, as tending to obscure the real aim and object of the training which has been already touched upon in these notes. It might be even advisable to entirely eliminate battalion drill and all close order work inculcating similarity of movement, from the training of the soldier designed for mounted infantry, and endeavour instead to develop his eye for cover, his capacity for judging distance, his individual intelligence and self-reliance.

The state of discipline amongst the mounted infantry in South Africa of necessity varied largely amongst different companies and battalions under diverse circumstances. There can be no question, however, that the more mobile troops may be, and the further removed from restraint they consequently often are, the more liable they are to find themselves in tight corners and the firmer must be the discipline enforced, if they are to be depended upon. It was a matter of common belief that the relaxation of discipline in the army at home was deliberately encouraged by the authorities under the idea that an easier lot and a freer *régime* would induce more men of a better class to join the ranks.

That the object desired has been attained under normal conditions to any considerable extent, statistics fail to establish; whether the relaxation of discipline referred to can be held accountable for our ill success on so many occasions in South Africa, it will be easier and fairer to judge when more reliable information is forthcoming.

There are probably almost as many opinions, as there are men, with experience of mounted infantry in the field, regarding the best equipment for that branch of the service.

Various types of saddle, adjustable and immoveable sidebars, strips of numdah, or stuffing for panels, leather shod nose-bags, butt-buckets for the rifle, lengths of built-up rope or long picketting ropes for securing horses, all have their advocates and opponents, an interesting study enough they certainly constitute, but beyond the scope of these notes to enter into, and beyond the qualifications of the writer to do full justice to.

All will agree that the mounted infantryman's saddlery, and equipment of every kind, should be the lightest, plainest and most workman-like possible. No cruppers or breastplates, no ornaments or superfluities, no bosses or bridoons, a mild bit on a plain strong bridle with a single rein, and as little as possible carried on horse or man. Everything which can be safely discarded sacrificed to mobility.

That there is nothing novel or original contained in these rough notes, nor suggestions brought forward which could not have been far more capably initiated by others of wider experience, the writer is fully aware; at the same time it is felt that no apology is requisite for the discussion of so interesting a subject, though doubtless one is needed for the crudeness of its treatment.

THE PRACTICAL TRAINING OF BRITISH AND NATIVE TROOPS IN INDIA WITH REFERENCE TO THE LESSONS OF THE WAR IN SOUTH AFRICA.

BY CAPTAIN W. C. WALTON, 4TH BOMBAY RIFLES.

Motto.—"Vulneratus non Victus."

Although some of the lessons of the war in South Africa may be useful only in reference to Boers in Boer country, most of them may, we think, be properly regarded as applicable to the training of troops in India. The chief characteristics of Boer tactics are, briefly, a combination of good shooting, great mobility, wide extensions, power of individual initiative, and the art of using or rapidly constructing cover.

Indeed, not until similar characteristics were introduced by our leaders into our tactics did superior numbers, discipline, and dash meet with that success in Natal and Cape Colony which was expected of them.

Boer tactics are based on sound principles, and, if supplemented by our own offensive tactics of bayonet assault and counterattack, the chances are surely in favour of their success in any other country, and against any other known tactics.

The history of tactics shows that their development has been and must be along these lines. It stands to reason that, in proportion as range, accuracy, and rapidity of fire increase, wider extensions become permissible, because one man armed with a modern rifle can cover with fire more ground, both laterally and to the front, than many armed with the old inferior firearms, and greater mobility is required because greater distance must be traversed under fire, turning movements must be wider, and the front covered greater.

The similarity of many of the lessons learned in Tirah to those of South Africa is remarkable.

The difficulty of practically training troops permanently stationed in the plains in many of the lessons of either of these hill campaigns must necessarily be very great.

Only by embodying these lessons in the drill-book or in whatever book is used in the curriculum of practical training, and by their rehearsal at inspections, is there likely to be any great measure of success.

The chief points for consideration, in reference to the practical training of troops in India, which have arisen during the war appear to be—

- I.—The use of quick-firing guns.
 - II.—A modification of the method of massing guns.
 - III.—The study of artillery surprise.
 - IV.—Long range artillery fire.
 - V.—Practice camp and manœuvre ground training.
 - VI.—Cavalry fire.
 - VII.—Cavalry reconnaissance.
 - VIII.—Mounted infantry regiments.
 - IX.—The importance of trained scouts.
 - X.—Extended order infantry drill.
 - XI.—The system of communication.
 - XII.—The individual initiative of subordinates.
 - XIII.—The simplification of close-order drill.
 - XIV.—Infantry in the attack.
 - XV.—Practical musketry training.
 - XVI.—The personal equation is still of vital importance.
- Let us take these in the above order.

I.—THE USE OF QUICK-FIRING GUNS.

The destructive effects of artillery against troops under cover seem to have been over-estimated. Even Lessons of the war. the effect of high explosives has been disappointing. But undoubtedly against troops and horses in the open and on transport trains, etc., both shrapnel and lyddite have been alarmingly effective. Moreover the moral effect of artillery fire has been proved to be very great, and to be largely proportionate to the rate of fire.

A number of improvements have been made with a view to obtain a quick fire from our guns, chief among Regarding quick-firing guns. which is the spade brake for limiting recoil. This proved a great success and saved our gunners much labour in working their guns. No doubt further improvements have been or will be made.

In proportion to its damaging possibilities a quick-firing gun, or a battery of such guns, does not offer so large a target to the enemy's fire as does the number of ordinary guns which can fire the same number of rounds in the same time; it is therefore less liable to be put out of action until it has done more damage.

At the same time it requires more ammunition wagons, because it will expend more ammunition in a given time; it will therefore offer as large a target in *matériel* though not so large in *personnel* comparatively.

Should suitable cover be available the wagons would offer no target, though perhaps still liable to damage by chance shots. The advantage of quick-firing guns is thus in favour of the defence.

Reconnaissance of positions must in the present day be largely carried out by artillery fire. The fire of Quick fire in reconnaissance. an ordinary foe will usually be drawn by the artillery fire of a reconnaissance in force. But the artillery engaged in such work must be prepared to meet the emergencies of an attack by the opposing cavalry and mounted infantry, which generally offer but a fleeting target. For horse artillery therefore most specially are quick-firing guns a modern necessity.

An acute defender may however hide both his guns and wagons so that they are invisible to the attacker. Possibilities in defence. He may withhold his fire, and refrain from disclosing his position as the Boers did at Colenso, Spion-kop, Doornkop, Enslin, Modder River and Magersfontein. He may withdraw from his trenches or shelter in bombproofs during the artillery preparation, and may make false trenches and dummies with the object of drawing that fire. He can thus await his opportunity, until his enemy offers a target, the destruction of which by rapid fire may effect decisive results.

We read that at Colenso on the 13th December, 1899, and again on the 14th idem our guns shelled the Boer

The attack.

entrenchments for about seven hours daily.

The Boers did not fire a single shot.

On the 15th December the naval guns were brought up to a range of about 4,000 yards from Fort Wylie, which they shelled, while the troops formed for attack.

When the Boers eventually disclosed their position, most of our guns appear to have been on the move.

At Magersfontein too the Boer entrenchments were shelled on the day previous to the attack, if reports be correct. So far as is known we gained no advantage from this firing; indeed it is highly probable that the Boers were encouraged by these efforts.

In the text-book used at the Prussian military schools the following sentence occurs:— "When attacking

Infantry co-operation.

fortified positions the preparation by artillery should, so far as time is concerned, not be separated from the infantry attack. The simultaneous advance of the infantry must compel the defender to man his lines, and to show his troops in order to secure for the artillery an effect that corresponds to the amount of ammunition it expends." The wisdom of these instructions was proved in the instances above quoted. In order, then, to force the defender to occupy his trenches it will, frequently be necessary to advance the infantry even up to 900 or 800 yards from the position. But the infantry must be well in hand for this work. Should they push forward and mask their artillery, before the defender has been

shaken, their losses will be excessive even in the case of a successful assault. As soon as the defender has exposed his position the attack may be commenced by the artillery preparation on the occupied trenches.

The artillery, having previously found the range of all places likely to be occupied by the defender, should then attempt to demoralise him with the most rapid fire possible.

There is, however, another aspect from which the question of quick-firing guns may be regarded, *viz.*, the expenditure of ammunition which they seem to encourage. Injudicious expenditure of ammunition, which may be regarded as the abuse of quick-firing weapons, is a serious matter, especially in a country where the difficulties of transport are great, and its replacement means the loss of some important necessity or comfort to the troops.

The serious problem lies before us of outlining a procedure which will tend to prevent the reckless expenditure of ammunition.

When we come to consider the practical training which will mitigate this evil we find that, like many others, it is one whose baneful influence is only fully felt under the conditions of actual war.

At the practice camp each round is guarded, counted and entered as expended with the greatest care. At the field-day, on the other hand, it is fired off (in imagination) as if there were no limit to its supply.

At the former then we must try to learn the conditions under which artillery fire would be effective against modern targets. While at the latter the general officer commanding should require from officers commanding batteries an estimate of the amount of ammunition which in their opinion they would have expended in the course of the day.

In this manner officers will learn to consider not only the subject of wastage of ammunition on difficult targets, but that of expenditure generally, and of replacement. More opportunities are required by our gunners for practising in co-operation with the other arms; and they must be trained to judge the time at which quick-firing will produce the greatest effect, having regard to moral effect, and to regulate their fire accordingly.

II.—A MODIFICATION OF THE METHOD OF MASSING GUNS.

On this point the experience of the war seems to modify former views, and leads us to enquire whether the

extended nature of the modern battle field will not, to some extent, necessitate a corresponding dispersion of batteries.

The massing of large numbers of guns does not appear to have been attended with that success which we were led to expect.

The advantages of having guns dressed in accurate line and at regular intervals are far outweighed by the disadvantages of exposure.

Even though protective cover may not be deemed requisite, it has been shown that casualties caused by fire from an invisible source are extremely demoralising; and that with smokeless powder a bush may afford valuable cover.

A too rigid adherence to the principle of massing guns has a tendency to cramp the effective action of artillery as a whole. Concentration of fire can often be obtained without placing batteries in close proximity in a cramped and exposed position.

New possibilities modify the principle of massing.

The old idea that a single battery on coming into action will at once be overwhelmed by the concentrated fire of its opponents is modified by the new possibilities of concealment. Increased range, smokeless powder, and cover tend to alter former ideas regarding the massing of a long line of guns at the regular intervals by a simultaneous advance.

Let artillery positions be occupied by batteries under the *direction* rather than under the *personal command* of their lieutenant-colonels; each major being encouraged to make a prolonged and careful reconnaissance of a position for his battery, to enable him to bring it into position unexposed.

At first, perhaps, batteries may impede each other, and concentration of fire be difficult; but with practice under the instruction of their lieutenant-colonel, brigade divisions should become expert in taking up such positions, and in withdrawing from them without attracting notice.

It may even be advisable at the longer ranges, on favourable ground, and under certain tactical conditions to have considerable intervals between portions of batteries, but to attempt such tactics with a personally commanded brigade division of 18 guns would hardly be common sense.

III.—THE STUDY OF ARTILLERY SURPRISE.

The "Morning Post" writes:—"Perhaps it is in artillery that the war has wrought most revolution in our

Lessons of the war. ideas. The royal regiment never had a name for adaptability, but it required a nation of farmers to prove how slowly it had progressed."

The clearness of the South African atmosphere, the good long-range marksmanship of the Boers, and the able manner in which they placed in position and manœuvred their guns all combined to make the task of the attacker a hard one.

Clausewitz says:—" Surprise is the chief element of victory."

Regarding surprise. Without concealment however surprise is impossible. In the days of short ranges and black powder artillery surprise and concealment in action were impossible. To-day the gunner is afforded a great chance for displaying his skill in handling his arm. We entered the war despising cover. Almost the only mention of it found in the F. A. D., 1896, being on p. 12, where the word "lastly" plainly indicates the esteem in which it was held. No encouragement to practise fire from behind cover was given at artillery camps; attention had however been invited to this subject in such papers as Major J. L. Keir's "A plea for indirect fire" *vide* Proceedings, Royal Artillery Institution No. 4, vol. XXIII, as far back as 1896.

The practical training required is (1) to train our batteries to conceal themselves; (2) to train them to fire with greatest possible effect from concealed positions without exposing themselves. The former can be practised at manœuvres and shooting camps. The latter at shooting camps only.

Artillery should be taught to surprise their own and other arms, and to achieve this the careful occupation and withdrawal from hidden positions should be frequently practised.

IV.—LONG-RANGE ARTILLERY FIRE.

For field guns great range is quite as important as mobility. An army suffers under very serious disadvantages if its artillery be even slightly outranged by that of its adversary. It is demoralising to receive fire without power to return it. The Boers have proved to the world the possibilities of heavy field artillery. At Estcourt they showed that, under certain conditions of inferiority in the mounted force at the disposal of an adversary, heavy field artillery can be useful even for the purpose of a cavalry, or mounted infantry, raid. They showed throughout the war that big guns can be hauled from place to place, and can be dragged to the top of what appear inaccessible hills, and can be sent down again in time to escape the clutches of any force that may be sent against them.

That guns weighing two tons and upwards can take part in the operations of a field army has been proved, first by the Boers, and afterwards by our own use of them in the field, both in Natal, and in the Western operations and Transvaal.

At present the length of fuze, and, even in India, the atmosphere The fuze, range-finder and clinometer. and the extent of the practice range set a limit to the distance at which firing can be practised. Fuzes must be constructed to burn longer; and more practice must be given in picking up ranges quickly at long unknown distances. Practice in the use of two instruments now in the hand of the gunner requires development—the range-finder and the clinometer.

The length of the ranges at most practice camps are so well known to all artillery officers who usually practice there, that commanding officers, in their anxiety to be quick, either hurry their range-takers into inaccuracy, or habitually neglect them; the result being a loss in their efficiency.

The clinometer has been placed at a disadvantage, partly because it has been found that the use of it will probably not meet with the approval of the umpire staff, and "marks" will be deducted; and partly because the procedure involved by its use is slightly more lengthy and complicated than that necessary for the sights, and still more "marks" will be lost.

In war, however, the advantage gained by the opening of an unexpected and accurate fire from an unsuspected point far outweighs that of quickness, involving exposure, and probable inaccuracy.

The practical training necessary can be given at manœuvres, and on extensive practice ranges, by insisting on a thorough concealment from the enemy of the occupation of the position.

On the practice range the firing screens should, for this purpose, be kept standing until the position has been occupied by the batteries. This will enable the range officer to observe what he can of the advance into the position, and this should form the object of a careful report by him. When the guns are ready to open fire, a signal should be made from them, and when the range is clear the firing screens can be lowered, and the practice proceeded with.

On the manœuvre ground batteries should be made to occupy the opening positions without exposure, their positions being indicated in the usual manner by screens near them.

To accomplish this successfully guns must be run up into position by hand, with the aid of drag-ropes, more than is done at present. To withdraw, the guns should be run back by hand and limbered up under cover. Horses should not be kept at limber supply (*vide* p. 157, F. A. D., 1896) but teams, on going to the rear after unlimbering, should halt at the normal distance behind their guns, be at once released, and sent to the rear independently, without loss of time.

V.—PRACTICE CAMP, AND MANŒUVRE GROUND TRAINING.

The practical training of artillery is of two distinct descriptions: *firstly*,—that of the regimental practice camp for technical training; and, *secondly*, and by far the most important,—that on the manœuvre ground in combination with the other arms of the service. Unfortunately the two can only be thoroughly combined in actual war. Accurate shooting, accurate drill, fire discipline, observation and effect of fire, the practical testing of ammunition and equipment, are all thoroughly carried out at annual practice camps. To these must be added the more careful occupation of positions at long ranges and more practice in judging the effect of fire on difficult targets in reference to the expenditure of ammunition. Considering its unavoidable limitations the present training at the practice camp is

thorough and practical. The interest taken in it by all ranks is very great. Its spirit is progressive. A tendency to regard the broad question of artillery tactics from the one standpoint of the artilleryman, without due consideration of the progress and action of the cavalry and infantry, must be regarded as its weak point. Thus gunners entered on the present war with the idea that infantry fire above 1,000 yards was almost harmless. And they still prepare to meet cavalry attacks from a frontal and oblique direction only, by a method which has probably never been used in this war, *viz*; the regulation method of attacking moving targets.

On the manœuvre ground the gunner should appear as an observant student, not as a bigoted specialist. The general of the whole force should be his instructor, not the senior officer of his own arm, whose lesson he should have already learnt at the practice camp. The movements of a well-handled enemy, the best means of supporting his side, the different phases of the attack and defence, all studied in combination with the progress of firearms, English and foreign, form the basis on which his tactics should be grounded. It is to our generals that gunners must look for real instruction in this branch. With our generals rests the solution of such problems as the following: the future employment of guns in masses; the method of occupation of distant positions; the means to be taken to limit the expenditure of ammunition so as to avoid wast. On their decision must be based the details of technical training which will best enable our gunners to carry out the rôle assigned to them.

VI.—CAVALRY FIRE.

When cavalry are covering the advance of the army, reconnoitring and, after driving in the enemy's cavalry, harassing his infantry, or threatening a flank, they are deficient in offensive and defensive power, so long as they are armed with a carbine having a range less than that of the rifle to whose fire they may be exposed, and which, moreover, they have not been taught to use efficiently. French's action east of Pretoria on the 12th June is one of many instances of a fight in which the cavalry felt the want of rifles.

Prince Kraft, in his "Letters on Cavalry," makes out a good case for a more advanced training in fire tactics, especially in his description of the method used by the German cavalry in harassing the enemy's bivouacs, etc. But although acknowledging the fire weakness of cavalry, and showing the necessity for fire strength, he stops short of the final conclusion. He deprecates any of the German cavalry being converted into mounted infantry, and is content to leave the cavalry with a weapon inferior to that of infantry.

In Germany the number of cavalry soldiers is only limited by the number of horses that the state can obtain and afford to maintain for their use; the mounted force in that country cannot be increased. In order therefore to have a force of mounted infantry some cavalry would have to be converted.

This is not the case with us, since, if our whole army were to be mounted, we should still be able to obtain, and to afford to keep, sufficient horses

Our mounted forces.
for the purpose.

Of course we do not require to do this ; at the same time it is quite certain that our mounted forces were not sufficient for the requirements of the South African war, and that we consequently suffered severely until we had got men on horses in numbers sufficient to bring us on an equality with our opponents.

The propositions have naturally arisen—

First.—Whether our cavalry cannot be trained to do all that mounted infantry can do.

Second.—Whether all that can be done by cavalry could not be equally done by mounted infantry.

To prove the first proposition two questions must be answered in the affirmative.

First.—Can a well trained cavalry man divest himself so completely of the training that identifies him with his horse, his arme blanche, and the mounted combat as to be able to do infantry work ; and if he could so divest himself, would he not lose much of the élan that is required in a good trooper ?

Second.—Could we spare any from our scanty supply of cavalry without materially weakening our power of acting with vigour at the end of a long day ?

Affirmative answers do not seem possible, for cavalry must be held in reserve for their over-ruling purpose of turning a defeat into a rout.

As regards the second proposition it will be sufficient to point out that mounted infantry in action must often have their horses two or three miles to the rear. They are not then in a position to take advantage of the critical moment, which is the ultimate purpose of cavalry, whose opportunities in action, always rare, are now more fleeting than ever.

In fact mounted infantry can no more do cavalry work than cavalry can satisfactorily perform infantry work.

We must retain that arm which not only moves but fights in the saddle, and the shock of whose charge would quickly clear most battle-fields of any number of mounted infantry.

If the rifle be carried slung over the back, the cavalry can be armed with a rifle considerably lighter than the carbine, and having a range and trajectory similar to the infantry rifle. By this means the weight of the buckets may be dispensed with, thus increasing mobility, and yet leaving, as before, both hands free for reins, sword or lance.

The cavalryman should be trained in sharp-shooting. The long deliberate aim, so common in match shooting, which may conceivably

be of use to the infantryman, should be unknown to the trooper, whose life must often depend on his celerity and precision. He should practice at ranges from 800 to 2,000 yards; it is at long ranges that cavalry fire action is essential. It is clear that such training is not possible with the small number of rounds at present allotted for instruction; nor could such training be carried out entirely on the range.

The instruction on the range should be in time-limit practices, and at vanishing and moving targets.

Off the range, owing to their superior mobility, cavalry should have little difficulty in finding ground suitable for practical musketry training.

VII.—CAVALRY RECONNAISSANCES.

The vast changes brought about by the introduction of smokeless powder have become evident very specially to the cavalry scout and patrol. No longer do they see, as of old, the tiny puffs of smoke which enabled them at once to locate the enemy, and keep at a reasonable distance from him. No longer can they, by watching the puffs of smoke, arrive at any fixed idea of the extent of ground occupied by their foe, nor by a closer reconnaissance with reinforced patrols obtain some approximate idea of the numbers who might be in occupation of the ground. It is difficult to judge whether 50 men are firing rapidly, or 500 men deliberately. All is a sealed book, so long as the enemy, as the Boers did, keep under cover.

The sole guides to the direction, distance and distribution of the invisible foe are the metallic tap of his rifle, and the "swish" of the bullets as they strike the ground. No doubt our cavalry in South Africa were handicapped by the heavy weight on the horse, and the fact that they had to deal with raw, unacclimatised animals who soon knocked up.

Allowing for this, however, scouting and the care of his horse seem to be the chief points in which the cavalry soldier has failed. It cannot be expected that reconnaissances can be thoroughly carried out with jaded and worn-out horses.

Our cavalry should improve their stable management and learn to condition their horses. They should accustom their horses to graze without straying whenever halted. They should dismount to ease their horses whenever opportunity occurs, and should perform some portion of long marches on foot; they should learn to use their field-glasses more and their horses' legs less. Non-commissioned officers, scouts and vedettes should always carry field-glasses; this would increase their efficiency and Government should supply them. By these means the cavalry soldier may hope to keep his horse fit to serve him, and not to die, under pressure.

Practical training.

Too much practical training in scouting under the new conditions can hardly be given, bearing in mind that the hill country of our northern frontier will probably be the battle-ground on which our cavalry will eventually be called upon to play their part.

Troops representing ambushes and surprises, as well as occupying positions in unknown strength, with an unlimited quantity of blank smokeless powder ammunition, should be put out as often as possible for the cavalry to locate and reconnoitre.

VIII.—MOUNTED INFANTRY REGIMENTS.

Perhaps the most important change in army organisation which the experience in South Africa has suggested is the demand for a large force of mounted infantry.

Lessons of the war.

The value of a force in which the fire-power of infantry is combined with the mobility of cavalry has been amply proved in the Boer campaign.

In 1881 the Boers showed, in a small way, what good shots in small numbers could do as mounted infantry; in 1900 the Boers have shown us, on a larger scale, what indifferent shots in greater numbers can effect by rapid concentration in favourable localities.

In respect of strategical mobility, which depends on transport, a force of mounted infantry is more mobile than any other arm; for the ponies, which convey the men to their posts on the battlefield, can be used as transport animals on the march. Without tents or other impedimenta, when forage is obtainable, the force would be independent of heavy transport and able to cover twenty to twenty-five miles a day for a considerable period of time.

As regards tactical mobility, infantry who have to rely on their own legs must, necessarily, be less mobile than those who are otherwise conveyed at a faster pace. The importance of mobility for purposes of attack can hardly be over-estimated in these days of wide turning movements. But for the defence perhaps the importance of mobility is even greater, for the attacker can be held in check by a thin line with modern rifles, and the remainder can be quickly massed in any direction to repel an assault, or deliver a strong and rapidly executed counterblow.

To check or harass the advance of an invading force, or for rear-guard actions, no troops can equal mounted infantry. By employing Boer tactics they can concentrate and reconcentrate, after having inflicted the maximum of damage and delay on the enemy with the minimum of risk to themselves.

Though greatly inferior in number to the foot soldiers otherwise needed, they can more certainly bar the advance of an invading force, by taking up positions where victory may mean the disorganisation of the invader, and defeat cannot mean more than a retirement to a similar position.

To us then mobility is of more importance than to other nations. But even had we an army equal in size to that of our great northern neighbour, the necessity for a large force of mounted infantry in India would still be emphasised by the experience of the South African war, namely, that mounted infantry must be met by mounted infantry, and we have at present no force which could compete on even terms with the cossacks.

Should we become involved in a war with Russia, we could oppose to the cossacks a collection of companies of men drawn from our infantry, who have, at some time or other, been taught to sit on a horse. Of men trained on this system the "Morning Post" remarks:—"The mounted infantry man is new to everything he should know by heart. He still handles his horse as if it were a camel, with alternate vengeance and entreaty, his arms are still an unsolved encumbrance, cover still something that rises above his head, and the skyline his favourite position of observation."

Individual judgment, foresight and readiness are the qualities which the mounted infantry require in their men. Often widely separated, often under charge of a sergeant to whom the work must, under the present system, be experimental and unfamiliar the capabilities of the individual are very highly tried. Quickness, readiness of resource, individual capacity, and self-reliance are essential qualifications.

Such qualities require a special and protracted training such as
 Regiments required. can only be given by the formation of regiments.

As at present constituted the mounted infantry section or company drawn from a battalion is, almost of necessity, composed of the flower of the officers and men. The strongest, steadiest, wiriest men of the battalion, valuable anywhere, are an absolute necessity for mounted infantry, and the total severance in time of war between the regiment and its mounted company is likely to cause more harm by the weakening of the former, than good can be achieved by the latter.

In the native army, even companies of mounted infantry have not been attempted, and yet for many reasons the light, hardy native would make an ideal mounted infantryman.

For purposes of peace training, and with a view to economy during peace-time, ponies sufficient to mount one company per regiment at a time only need be maintained. Each company in the regiment taking it in turn to undergo mounted training and look after the ponies.

In the mounted infantry drill-book it should be made clear that the infantry are mounted on ponies simply because the latter are better and more mobile than wheeled transport, and that the cavalry still remain the eyes and ears of the moving army. Until they realise these facts mounted infantry will be but bad irregular cavalry.

Their practical training should be such as is indicated by the experiences of the war, the capture early in the day of some doubtful point on the flank, the sudden reinforcement of a hard-pressed regiment, the rapid gaining and occupation of a wood, the seizure of a

position from which the enemy's flank or line of retreat can be commanded, the cutting off and capture of detached parties of the enemy, the rapid moving from position to position, and offensive-defensive action generally. The mounted infantry will be the force, the fresh infantry which, when matters balance, will decide the issue of the day, and when it is decided, will render the condition of the enemy such that the cavalry may complete the ruin, and yet be within reach of infantry support, or in case of retirement will hold the enemy in check.

IX.—THE IMPORTANCE OF TRAINED SCOUTS.

Not only is reliable scouting essential for our cavalry and mounted infantry, but, as not a few occurrences in Lessons of the war. this war have gone to show, every company of our infantry requires at least one reliable scout before it can be regarded as a thoroughly efficient unit, which may be sent on detached duty without imminent risk of surprise and effacement.

The necessity for a corps of scouts, in addition to the scouts in each regiment, trained in all the intricacies of scouting as understood by the American Burnam, is a lesson of the war.

The military drill and equipment of such a corps would probably be similar to that of the mounted infantry, the smartest men of which might form the nucleus of the corps.

The only reference to scouting that can be found in the 1896 infantry drill-book occurs in section 171. Neglect of scout training. Even for purposes of drill these instructions are exceedingly vague; they require to be amplified, and made more definite.

A perusal of General Baden-Powell's "Notes on Scouting" cannot but cause astonishment that a matter of such extreme importance should have been neglected in our army.

It may be said that every regiment was expected to instruct its own scouts; but regiments must perforce give their whole attention to perfecting those exercises which are inspected.

Musketry training is considered important, therefore musketry instructors are appointed, musketry regulations published, and prizes and badges given; the same with signalling; even good conduct is rewarded by a badge and extra pay. But no badge, course of instruction, prizes, or extra pay are provided for scouts. And yet the art of scouting is as important as musketry, for of what use is good shooting to troops who have walked into an ambush? Or as signalling, for every scout should be also a signaller; it deserves a badge and extra pay as much as ordinary good conduct, for no scout is of any use unless he be trustworthy and reliable.

It is not a fact, as might be inferred from infantry drill, section 171, that any intelligent soldier or officer can be relied on as a scout and that therefore there is no need for special instruction.

In addition to having a knowledge of signalling a scout must have an eye for ground under all circumstances, and ability to make an intelligible eye or memory sketch, he must have quickness of eye and hearing and good powers of logical deduction as a good tracker; he should have a facility for picking up languages colloquially, and observing the habits and customs of the people of any country; he must be capable of great exertion, riding or walking, and of being independent as regards his feeding arrangements, and he must be made fearless and discreet by the sureness of his knowledge. Should an instructional course be formed much time and hard work would be required in order to obtain any satisfactory results. Since those trained to scouting from boyhood have a great advantage over others, the enlistment and special training of boys for this work only should be instituted. In the native army sons of native officers might be enlisted young for the corps of scouts, who should be practised in tracking and hunting dacoits, and other detective work, and some at least should be trained on our frontier.

X.—EXTENDED ORDER INFANTRY DRILL.

The number of men required to cover a given front whether in attack or defence is very much smaller than formerly.

Lessons of the war.

At Kroonstad the attacking line extended over twenty miles. At Mauchsburg on September 8th, the three attacking battalions started on a front of about six miles, gradually approaching nearer each other as they came to the top of the hill. And at Jammersberg 1,700 men successfully held a perimeter of seven miles for six weeks against from 8,000 to 10,000 Boers. This is to be attributed to the use of smokeless powder having the effect of deceiving the adversary, to the increased range, flatter trajectory, and rapidity of fire of the weapons employed, and partly to the great mobility of the troops engaged.

Close formations may still be necessary where we are, in open ground, so outnumbered by an ill-armed courageous foe that he is able to envelope us on all sides in his attack; even though the smoke from our own fire, which formerly hid the adversary from view at the critical moment, will no longer tend cover to a rush.

But against a foe armed as ourselves any close formations invite heavy loss and defeat. It is generally recognised that the extended order drill of our troops was, at the commencement of the war, unpractical, thus leading to unnecessary loss.

Let us consider the causes of this, and attempt to discover some method for its rectification.

At the end of last and the beginning of this century, skirmishing had a recognised place in the drill-book. Skirmishing the foundation of attack formation. Special regiments, trained in skirmishing, were called "Rifles" and "Light Infantry", and in many other regiments companies, called "light" com-

panies, were specially trained to skirmish, to cover the advance or retirement of the column or line.

As the power of the rifle gradually developed the importance of the skirmishers was more and more recognised, their strength, and distance from the bodies of formed troops whom they covered, was gradually increased, until it was found, in 1870, that no advance could be made against breech-loading fire except in successive skirmishing lines. Thus those bodies of compact troops which hitherto had followed the skirmishers were now themselves formed in skirmishing formation, and gradually pressed forward to fight in the skirmishing line. We thus see that, of all formations, or movements, in which our troops can be drilled, the skirmishing formation is the most important since it is the foundation on which the attack against modern rifle fire must be built.

There is now no longer any meaning in the terms "Rifles" or "Light Infantry."

Part VIII of the late infantry drill was devoted to the art of skirmishing, but the present drill-book has ignored skirmishing altogether, unless sections 47 to 57 can be regarded as instruction in skirmishing. In section 47 the most important essentials of extended order drill are included in verbal instructions to be given to the recruit by his instructor. For instance, the recruit is to be told that the front of the section skirmishing will be covered by scouts, and that he is to think and act for himself.

He is not in the succeeding nine sections, which include the actual practice, taught the duties of the scout, nor is he allowed to think or act for himself, since his every movement has necessarily to be conformed to the words of command minutely detailed therein.

It is not to be supposed that "the intelligence of each individual recruit" can be developed by word of command, nor that an instructor will be able to teach men to think and act for themselves, when the drill-book is unable to show him how this most difficult matter should be undertaken.

Careful and detailed teaching is most necessary, and some such instructions as the following should be included in the drill-book :—

1. When skirmishing every section commander should take note of the ground as a hunter does. At all times he should be considering within himself what movement he would make in case of an order to advance, retire, or move to a flank, and should fix in his mind what will be his next position in case of such a movement.
2. If ordered to hold a position section commanders should see that the men improve such cover as is available, or construct cover as opportunity offers.
3. In advancing or retiring every advantage should be taken of cover. The section need not necessarily be advanced in line or all together; it may advance for the sake of cover in file, or may rush

forward, one or two men at a time. The section commander must use his judgment regarding the method of advance and of retirement. When retiring from one position to another between which no cover is available, a few of the best runners of the section should be left in position to hold the enemy, the remainder of the section should double back to the next position; the retaining files will retire as soon as the section has taken up its new position, clearing the front and doubling in. Should cover be continuous, or should there be no positions or cover, retirement should be made by rushes of alternate sections or files.

4. Section commanders are responsible that any information obtained by them concerning the enemy, or any orders received which affect other sections in the line are passed on to other section commanders. If necessary they should pass the word from file to file, or send a man of their section for the purpose.

Cohesion in a skirmishing line as well between the individuals as between sections and all other units is of vital importance.

5. All skirmishing should be by files, the rear-rank and front-rank side by side to assist each other.

6. Such a line should be maintained that, taking into consideration the nature of the ground each man may (i) fire on the enemy; (ii) take advantage of cover.

Then again, with reference to infantry drill, section 124 (8), there appears no reason why the frontage of an attacking force should not greatly exceed that which the troops composing its first line would cover were they deployed two deep. This frontage hardly permits of advantage of cover being taken in the advance, since each man must keep a comparatively straight line to his front, as well as keeping the alignment with men on his right and left.

Cover, a well defined part of the enemy's position, or any point to which the men's attention may be particularly directed will cause skirmishers to draw together.

Wider extensions give room for manoeuvring individually and collectively, and are a safeguard against "bunching."

The less that is known regarding the enemy's position, the greater the necessity for advancing at first a widely extended line of skirmishers, so that the firing line may at first answer reconnoitring purposes.

Moreover, men can close more easily than they can extend; a skirmishing line is easily made into an attacking line, but not so easily an attacking line into a skirmishing line; and the disadvantages of too thick a line are many more than those of too thin a line.

All extensions should take place under cover, and by files. The men of a file help each other morally, in observation and correction of fire, and in overcoming obstacles.

Other points.

Supports should remain under the nearest available cover whether it be 50 or 800 yards from the firing line. They should make one advance from cover into the firing line. The only places for men to halt are under cover or *in the firing line*. The closer a support can get to its firing line provided it is under cover the better.

The instructions for advanced guards and flanking parties in the drill-book are vague, and there are no instructions regarding escorts. An artillery officer, who was with his battery in Tirah, remarked to the writer that, frequently, the young officers of the British infantry, detailed on various occasions for duty with his battery, had no knowledge of the duties of escort to guns, and were of little or no use as such.

Some such instructions as are contained in Major Scallon's "Notes on advanced guards, etc.," should be included in the drill-book.

Commanders of units should not be glued to their commands. The commander of a battalion ordered to come into action should take forward his captains, make up his mind, by personal observation, as to the ground he intends to occupy, and allot a certain portion to each company. In this manner the captains will have time to look at the ground allotted to them. The companies can march straight on their captains, thus saving valuable time, and avoiding marching and counter marching. Captains should be mounted. An attack properly commenced is half won, and by studying the ground and the tactical situation the commander is enabled to know how, where and when best to utilise his force.

Whenever troops are taken out some simple scheme should suddenly be given. In war things happen suddenly, and practice in suddenly solving such schemes teaches a man to think and accustoms him to act quickly and correctly. Our endeavours should be centred upon training men so that nothing, however unexpected, takes them by surprise, and the way to do this is by constantly giving all ranks problems to solve suited to their rank and capacity. The great point in the solution of these problems is to see that orders are quickly and distinctly given and that no time is wasted.

XI.—THE SYSTEM OF COMMUNICATION.

The maintenance of an effective system of communication, which was briefly touched upon under the last heading, is of very great importance, and of increasing difficulty owing to increasing width of extension and depth of the fire-zone.

Lateral communication must be maintained not only between all the units of a battalion, but between battalions, brigades and divisions; otherwise concerted action is not possible.

Moreover, communication should never be broken between the army commander in rear and the fighting line of each battalion in front.

The Boer war proved not only the difficulty, but also the urgent necessity of keeping up such communication. There is little doubt that the absence of a good system of communication was more than once the cause of disastrous loss of the fruits of much stubborn fighting, and of the vain sacrifice of many brave lives. Instances need not here be particularised; they will occur to the mind of every student of the war. Any officer who has carried messages in peace manœuvres can call to mind occasions when he has only found the addressee after riding miles and wasting much precious time, or has even been unable to find him at all until the march of events has rendered his message meaningless. How much more frequently must such mischances repeat themselves on the battlefield.

The following remark is ascribed to a British officer who served with distinction in the last Egyptian campaign:—"In the battles of this campaign our generals, with very few exceptions, were with the firing line. If they do the same thing when fighting with a force trained on the European model, then I do not know how they will be able to conduct a battle."

In the accounts of battles in South Africa we read of officers commanding battalions, brigades, and even armies, becoming engaged in the firing line, long before the reserves of their respective units had been brought up.

It can only be supposed that officers find it necessary to proceed personally to the vicinity of the fighting line because of the difficulty experienced by them in influencing the action there by any other means. This difficulty must arise from a defective system.

The Prussian staff insist that officers commanding battalions and larger units should accustom themselves in peace manœuvres to conduct the fight from behind. The reason for this is obvious, for, not only is the officer in the firing line not in a position to obtain an extended view of the operations, or of communicating his will to any but those in his immediate vicinity, but the impressions caused by witnessing losses must influence the mind of the most phlegmatic commander, and thus affect his decisions, which, on the contrary, should remain unbiassed by local occurrences. He should be influenced only by the tactical requirements of the situation, in order that he may conduct the battle as an organic whole.

The lessons of the war point to the vital necessity for the organisation of a more perfect and reliable system of communication, both between units laterally, and also between the superior officer and the units under his command.

Whether such organisation should consist of a special service of messengers, under specially trained officers, the whole to be put under command of one officer whose duty it would be to take the

general dispositions, and provide for coherence, and a speedy transmission of information ; or whether some other system would be best, can only be decided by the test of experience, and frequent experiment in the field, both in peace and war.

One thing is clear—whatever organisation may be adopted will require constant practice under field service conditions in peace-time.

Practical training.

XII.—THE INDIVIDUAL INITIATIVE OF SUBORDINATES.

The Boer war has proved that the power of intelligent co-operation, and concerted action, may be possessed by a force however large, however extended, and however unpractised in drilling by word of command. Further, that this power can be obtained by means of utilising the common intelligence and faculty for initiative possessed by the individuals of the force ; and that, to this end, no great individual intellectual ability is essential.

Lessons of the war.

Our "Infantry drill" advocates the encouragement of initiative but because of the innate contradiction between the system of exact drill by word of command, which is explained, and the principle of initiative, which is not explained, the order has been more honoured in the breach than in the observance.

In training men to drill intelligently in widely extended order it is essential that, at the time of drill, no faults should be found. Commanders and instructors must continually bear in mind that there is, generally, more than one way to arrive at a given conclusion. Should anything take place for which the commander can see no good reason, he should, after the drill, ask the reason. He can then explain what, in his opinion, should have been done under the circumstances.

Fault finding.

Mistakes will occur, and it is only by pointing out mistakes, explaining clearly why they were mistakes, and giving the true principles and reasons which should have guided action, that intelligent initiative can be cultivated.

The more mistakes occur, the more opportunity will the commander have of giving sound instruction. But to find fault during the execution of the manœuvre is to distract the attention of all, to lessen the interest taken in the work, to convert an interesting manœuvre into a gloomy drudgery, and to crush initiative. In battle the men who neglect principles of drill will be punished by the bullets of the enemy ; in manœuvre, men must be instructed as regards mistakes, and blamed only for deliberate neglect of such instructions.

It is most important that drill in extended formations should be made interesting to all ranks. To achieve this commanding officers find their highest powers of ingenuity and imagination taxed. But there are a few remarks that may be offered.

Method of arousing interest.

The custom at the end of a field-day of holding a "pow-wow" when movements are discussed and mistakes pointed out is a good one, although often it might be more instructive if the conference were postponed until after bodily and mental refreshment; moreover the decisions should be communicated eventually to all ranks engaged. But it is not the custom to hold a conference before a field-day to explain the objects of the day, the methods proposed to carry them out, and the reason why such methods are proposed. Yet this is essential in the case of a field-day, where instruction is the dominating purpose although in the presence of an enemy, where imagination has not to play so important a part, it may be neither possible nor advisable. Infantry drill, part X (2 and 3), directs that schemes should be communicated and explained to all ranks, but seldom is this done intelligently, and yet to ensure that all should take an interest in the manœuvres it must be so done.

It is as true in the case of field manœuvres and all extended drill, as in the case of scouting, that—"the secret of getting successful work out of your trained men lies in one nutshell—in the clearness of the instructions they receive" (General Baden-Powell's Aids to Scouting, page x).

Too frequently it may be observed that the author of a scheme is the only one who takes any interest in its execution and success, or is disappointed if it goes wrong, because he is the only one who understands its object and meaning. It will, perhaps, be objected that a "pow-wow" at the commencement of a field-day, often in the dark of the early morning, when the men would be kept standing about while explanations are being asked for and given, is not likely to make field-days more popular. Certainly not, but a couple of hours spent in a conference between the author of a scheme and his officers, where each is at liberty to ask information, or raise an opinion for discussion, and afterwards a quiet chat between those officers and their non-commissioned officers and men, on the evening previous to manœuvres, will not be time wasted. It is not indeed possible to imagine any better plan for creating that individual interest which is absolutely essential for intelligent initiative, without which co-operation and efficiency in extended order manœuvres is unattainable.

Then again information regarding the enemy received through the scouts, if not confidential, should be communicated to all ranks.

Other methods.

Special commendation should be publicly given to those who display an intelligent initiative.

Shikar expeditions and scouting competitions, when in camp or bivouac, will tend to appeal to, and excite, the soldierly interests of all.

XIII.—THE SIMPLIFICATION OF CLOSE-ORDER DRILL.

If for no other reason, then in order to find time to thoroughly carry out the extended order drill as previously discussed, close-order drill must be

Lessons of the war.

simplified.

But it may be shown that there are other reasons why this should be done.

The Boer war has proved that any drill in close-order formations within four or five miles of a well-armed foe admit of unnecessary casualties, which have a bad moral effect.

A certain amount of close-order drill is indispensable on the march, and for ceremonial occasions, for guards, arm-drill, and setting-up drill. With the exception of the two first mentioned, these drills can be carried out more efficaciously by squads than by larger bodies, and it will be necessary to retain some squad and company drill in close order. It has been said that troops trained in the hills will never find any difficulty in manœuvring in the plains; it may equally be said that troops trained to drill well in extended order will find no difficulty in performing such simple manœuvres in close order as are necessary.

The most important principle of a good system of drill is simplicity.

Principle of simplicity. In the days of shock tactics complicated drill was necessary for purposes of discipline; it served to train men to restrain their natural desire for individual action, and to give up their wills entirely to their leader, to work as automata, so that a whole battalion acted as one man at the will and word of one man.

Concerted action was attained by the process of assimilating men to machines.

This was the aim and object of complicated drill.

It has long been recognised that no complicated drill can succeed in presence of a civilised enemy.

By the term "simplicity" in drill is meant exactly the opposite of all this. A simple drill implies the fewest possible words of command, the absence of movements unconnected with the immediate objective, the practice of movements of which every man may understand the reason and guiding principle.

The aim and object of simple drill is to train the men rapidly to grasp the will of their leader, and to carry it out in the best way on their own initiative, but with co-operation and unity of action.

As opposed to complicated drill the appeal is made to each man's reason, instead of to each man's power of unreasoning obedience.

Concerted action is attainable by the process of training the intelligence of the men. Obedience there still must be, more than before, and of a higher order. Discipline there still must be, but it must be that of a well trained and trusty servant, not of a brainless automaton.

We must, then, in simplifying our drill, always hold the true principles of simplicity in view.

Many ideas relating to simplification of our drill will suggest themselves; the following are a few :—

Methods of simplification.

The way in which men are facing should always be their front.

Quarter column should be done away with. Column of companies can be formed at any convenient distance.

The above would simplify ceremonial drill. As regards battalion drill generally, though some of the old school still argue that the accurate wheel of quarter columns, and other complicated manœuvres are indispensable for discipline, and for making the men smart, most men of the present day agree that discipline is to be attained by doing whatever has to be done to the greatest possible perfection, and does not depend on any particular form of drill. And that the smartness required of soldiers is not that smartness which will induce them to march with "breast advanced, head erect, chin slightly drawn in, and eyes looking straight to the front" into battle, but a different kind of smartness altogether; something more akin to that quality which the Boers call "slimness", or to that smartness which has gained for our sailors the soubriquet of "handy man."

A showy smartness is indeed a fallacious test of efficiency.

Few now-a-days will deny that it is a wrong principle to practise on the parade-ground that which is impracticable in the field, and not absolutely necessary in peace-time. The battalion should not, therefore, be taught to act on the executive word of the battalion commander. For ceremonial purposes, and on the line of march, the only formation required for use is the formation of companies, in line, column or column of route. The words of command from the battalion commander should be non-executive, as for example, "Form column": "Form line in a named direction."

In fact the battalion commander should not be tied down to any special words of command, but should explain, in a few words, what he requires; just as he has to do when drilling the battalion in extended order. The company commanders should then lead their companies the shortest or best way. All executive words of command, which should be reduced to a minimum, should come from company or section commanders.

All movements should, as far as possible, be ordered by signals.

The same system of drill and command would equally suffice for all the close-order brigade drill that is required.

If companies are well drilled there will be little need for practising close-order battalion or brigade drill.

In order to save time, to keep men in training, and to teach them to act quickly, all interior movements of the drill of any unit should normally be performed at the double.

Efficiency in the performance of arm exercises by the simultaneous action of a large body of men is only useful for the manufacture of automata, and for show. It is desirable that every man should be able to handle his arms smartly; but to attain such a degree of individual efficiency, drill in small squads is far more effectual than in large units.

Arm exercises should therefore never be practised by units larger than companies. Special attention should be paid to the bayonet exercises. It was

Bayonet exercises.

supposed by many before the Boer war, that modern firearms preclude a bayonet charge, and that the fight would be decided by fire-effect at about 500 yards range. But at Inniskilling Hill we find the opposing forces within 300 yards of each other unable to settle the dispute by fire-effect; and in the final assault on Ladysmith, we hear of the still greater proximity of the combatants with the same result, the bayonet alone being the final arbiter of the fight.

Had the Boers been armed with the bayonet it is probable that the necessity for training in its use would have been emphasised. However that may be, confidence in the power of the bayonet, and the ability to use it, are to be encouraged, because the more our men have the desire to get at the foe with the bayonet, so much the more will they endure the preliminary rifle fire, and maintain their advance in order to effect their main object.

An increase in the issue of spring-bayonets, and the inspection by general officers of squads in combat exercises, together with a more generous share of prizes for bayonet combats at assaults-at-arms, and the introduction of bayonet targets on which the bayonet assault may be practised, would all tend to promote efficiency in the use of that weapon on which the British soldier in battle pins his faith—whether he has learnt to use it or not.

Simplification of the instructional drill of recruits might be arrived at by a more personal system of education, with a view to cultivate the power of intelligent initiative. No recruit should be permitted to drill in squad until he has passed individually in gymnastics, bayonet combat exercises, musketry, marching 18 miles in heavy marching order, and simple scouting and outpost duties.

When he has mastered the above he should be put into a squad to learn co-operation and concerted action in extended order, and finally arm-drill, guard duties, and the drill necessary for ceremonial purposes. Company commanders,—in the native army double company commanders,—should instruct their own recruits.

Finally, uniformity in the drill and instruction of our infantry is wanting. Want of uniformity does, even in peace manœuvres, cause some confusion and complication; much more so must this be the case on service amongst large bodies of men.

No method would be so efficacious for purposes of simplicity as uniformity in the method of drill inspection.

XIV.—INFANTRY IN THE ATTACK.

Everybody is aware that in mimic war many inevitable absurdities occur. But there are others that can

Absurdities.

and ought to be avoided. One of them is the recklessness with which the strongest positions are attacked, and of course carried; another is the supreme contempt with which every kind of cover is treated. Officers and men thus acquire a totally wrong idea of real warfare.

There are two main forms of attacking a position. *First*,—the deliberate form, the main object of which is to gain the least costly success : *second*,—such a form of attack as will eject the defender from his position without loss of time at all costs.

The two forms may be separate or combined, or one may during any phase of the fight be converted into the other.

As an instance of the first we may take the final attack on Cronje ; of the second. Belmont or Graspan ; of the two combined, the passage of the Zand River on the 9th and 10th of May ; of conversion from one to another, Rundle's operations on the Ficksburg-Senekal line ending with the capture of 4,000 Boers.

In considering the first mentioned form in reference to the lessons of the war, it may be presumed that *The deliberate form.* in future the defender's object will be to prevent the attacker from ever coming to close grips with the real defence by throwing out false flanks and advanced positions, to deceive the attacker by altering his dispositions, and to construct trenches to be occupied during the progress of the fight to the discomfort of the attacker.

The attacker will in future seldom commit himself to an attack as we have hitherto understood the term, but will devote himself rather to rendering the defender's position untenable. When the latter is compelled to quit his position then the attacker should find his opportunity to destroy him.

The idea encouraged by infantry drill, part V, that under all circumstances the fight must be brought as quickly as possible to the test of the bayonet, and that it is not possible to overcome an enemy without the use of the bayonet has been proved by the Boers at Nicholson's Nek, at Reddersburg and on other occasions to have a very restricted limit of truth.

When time permits, the firing line would be advanced under cover of night, or of the fire of artillery, and would throw up cover. As opportunity offers a further advance might be made and cover thrown up as before. Should further advance be found impossible these trenches could be held and the enemy's attention occupied from them, whilst an attack by the supporting troops developed on his flank.

We have heard much of various schemes for providing cover for the attack, among others that infantry should carry shields (and if a bulletproof shield did not weigh more than a pick and shovel it would doubtless be more useful), and again that artillery having covered the advance of the infantry to 500 yards from the position with shrapnel should then open with smoke balls.

But as far as can be judged at present, the only practical way of providing cover for infantry in the attack is to dig, or to move by night.

Modern weapons of war have accentuated the value of night manoeuvres, and occurrences in the Boer war have emphasised the necessity for the thorough training of troops in every description of movement by night. Darkness not only provides cover from aimed fire, but permits of surprise. Although a regiment of marksmen would, by night make little, if any, better practice than one of thirdclass shots, yet we learn from the Magersfontein experience that to approach within 300 yards of an ambush or the trenches of a watchful enemy in column formation, even on the darkest night, may entail heavy loss from unaimed fire and confusion.

Infantry drill, section 179 (ii), appears to take it for granted that the advance would be in column. Should the country permit of an advance in line so much the better; the line is an easier formation to maintain, and is not so vulnerable as a column. Whatever formation be adopted, the troop must be covered by a few trained scouts at a distance of not less than 500 yards. For night marching an advanced guard would be liable to increase the chances of confusion. Only with constant practice is great accuracy in night marching attainable.

Infantry will have to be taught to trust to their picks and shovels as well as to their rifles, not only in defensive, but also in offensive operations. This employment of infantry besides special training requires special equipment; the native pioneer regiments afford excellent models. Engineers might be called upon to assist infantry occasionally at field-days in attacking strongly intrenched positions; it appears important that the two corps should have some opportunity of practising together what they may be called upon to perform together. Moreover, the infantry from seeing the sappers at work would have the advantage of a practical illustration of the work required of them. We read of the engineers digging trenches for the Canadians just before the surrender of Cronje.

The infantry should, however, by no means be led to depend on the engineers to provide cover for them. Such dependence is liable to lead to disaster. Had our infantry been trained in the art of rapidly providing cover, it is possible that the retreat from Spionkop might have been averted.

The drill-book of 1896 advocates the disposition of the third line for the purpose of "confirming a success, covering a retreat, or meeting an emergency." No one could gather from this that the use of the third line as a reinforcement to the fighting line is contemplated. But General Cleary, in the twelfth edition of his *Minor Tactics* published in 1893, which is used as a text-book, writes on page 356:—"The primary object of the modern fight is to conquer the enemy which the fighting line is engaged with, whether you are attacking his front, his flank or his rear. No success elsewhere will be of much avail if you fail of success there. So, as a general principle, no men should be retained

out of the fighting line when wanted there for this purpose. Retaining men in reserve to guard against possibilities or to cover a possible retreat, while the battle is being lost in the firing line for want of them is no longer admissible." No doubt both the drill-book and the text-book are right.

The former may be taken to refer to such an attack as we are now considering; the latter to that which we shall proceed to consider hereafter.

The difficulty of deciding under modern conditions whether the defenders have actually been demoralised or are merely lying quiet awaiting the onset of the attacker's infantry demands that, in the future, the third line should take up a defensive position, to cover a possible retirement.

This counter position will at first represent merely a *pied-à-terre* at a distance, but will gradually be pushed forward until it becomes a series of intrenched lines having offensive as well as defensive value.

In short the first step towards carrying a position is to take up a counter position and proceed gradually to improve it to the detriment of the enemy. The attacker will close upon his opponent, partly by sap, and partly by seizing opportunities for gaining ground by day as well as by night. And his object will be to obtain positions from which to bring crossfire upon those held by the enemy, and to threaten or assail his communications.

So much for the deliberate attack, as for the second form, occasions may arise when time will permit of nothing but a direct attack, delivered with the greatest rapidity, when the numbers and mobility of the attacker do not permit of a turning movement, and when it is absolutely necessary to eject the defender from a position without delay, before the arrival of reinforcements, or for some other urgent reason. There will be no time for intrenching. The attack must be made and carried through over such ground as is available, regardless of losses.

It will moreover be found convenient or necessary, in most cases to combine the two forms, or at some phase of the deliberate to convert it into the rapid.

The best formation for an infantry attack under such circumstances requires much consideration. It will be difficult to advance the supports and reserves at intervals of a few hundred yards regardless of cover, as has been the general custom hitherto, for they will either merge at once into the firing line under the pressure of the instinctive knowledge that one line offers less target than two, and that in the firing line they will at least be able to return the enemy's fire, or they will remain in their places and suffer demoralising casualties.

The formation of successive waves is not open to the above objections, but the moral support afforded by the visible presence of

supporting troops is wanting. The experiences of the war lead us to believe that British troops would advance regardless of this want of moral support.

Troops at manœuvres should not be permitted to approach within 800 yards of a position except under cover until the umpires permit them to do so, and then only on the supposition that the enemy are ill-armed or demoralised.

The lines of communication of attackers or defenders are too often lost sight of at manœuvres, the country is very large and the opposing forces, as a rule, extremely small, but all troops are actually more or less dependent on lines of communication, and if it be impossible to turn them out of a position by direct attack, a threat on those lines will often have the desired effect, and should be more frequently practised. General French in his operations round Rensburg seldom attacked a Boer position in force, but by threatening flanks and communications induced them gradually to withdraw, and occupied the positions as they left them.

It seems clear that more attention must be given during field-day manœuvres to the tactical movements and disposition of troops, to the positions taken up and cover obtained; umpires should look to this.

The use, or rather the abuse, of blank ammunition tends to increase the difficulties of impressing these more important lessons on the minds of all concerned. For such training as we have been discussing troops must go out for the day, or for two or three days at a time. The idea of the morning field-day and back to breakfast will have to be abandoned.

XV.—PRACTICAL MUSKETRY TRAINING.

Accurate marksmanship has been proved by the war to be more necessary than ever; more important indeed than fire discipline or any other fetish.

Marksmanship.

In this connection a letter to the "Times" from "Bivouac" who commanded a company which, for the last two years, averaged over marksman's points is noteworthy.

He relates how three companies on a kopje, of which his was one, without reinforcements, held at bay all day, and finally drove off 2,000 Boers. After describing the action he writes:—"On visiting these kopjes a month later and going carefully over our and the enemy's position, I was strongly reminded of some lines in Carter's 'Story of the Transvaal War' describing the battle of Ingogo in 1881:—'The boulders which sheltered our men were whitened with lead, but, from the bulletmarks on the rocks behind which the Boers took cover, I cannot ascribe such similar good shooting to our side.' In the present case the results were reversed. Empty cartridge cases showed what had been the position of each man on either side. On our kopje the bulletmarks on the rocks were few and far between, but every rock which had afforded cover to the Boers, shown by empty

mauser cases, was covered with bulletmarks." Accurate long-range weapons and smokeless powder place a premium on marksmanship. Indeed they demand practical qualifications from the marksman not formerly demanded, some of which are discussed below.

With a view to more practical musketry training a tentative scheme has been published. This scheme provides for a large number of practices being performed off the range and also for more practical range practices.

Any training on the range can be nothing more than preliminary, but the present course of musketry on the range hardly commends itself as even a practical preliminary training. We find that in South Africa most of the shooting was done at ranges between 2,000 and 1,000 yards, whereas few ranges allow of practice over 1,000 yards.

Moreover, our rifle-ranges, when possible, are constructed so that the morning sun shall fall on the face of the target. The targets are white with black bullseye, and by accurate firing at this target a man is able to earn the distinction of marksman.

As range practice usually takes place in the morning, the men are unpractised in shooting, or seeing objects, in a bad light.

An illustration of this occurred at the brigade field-firing at Mhow for 1899-1900, when, owing to some delay in clearing the ground, the morning sun had gone behind the targets before the troops began to fire. The result was that the stationary targets of khaki colour, which were perfectly visible by the morning light, were unseen by the brigade when they fired shortly after mid-day, and were, consequently, untouched. The fire was concentrated solely on a few prominent moving targets.

It is very necessary that our soldiers should be trained in such practices as may develop in them quickness of eye. By quickness of eye is meant the ability to see objects, which the eye of the ordinary observer would overlook.

It is reasonable to suppose that the invariable invisibility of the Boers would not have been so much remarked had our soldiers been quick of eye. But this is a quality for which our men had little if any practical training; the range musketry course as laid down in our regulations is certainly not calculated to cultivate quickness of eye, but rather the reverse.

It is not sufficient that this training should be confined to collective practices, it must be individual. No man should be in a position to claim the proud title of "marksman," until he has proved himself to be possessed of this important faculty. Quickness of eye might be developed by an arrangement of targets in certain competitions, where the value of hits would increase in proportion as they were made on those targets more difficult to see.

Before becoming entitled to call himself a marksman each man should also have to prove himself a good judge of distance. There is no

better or more practical method of practising judging distance than that of giving men a few rounds of ball to fire at unknown ranges.

Practice in shooting from behind cover, using, when possible, the cover as a rest for the rifle, is required.

Shooting from cover. On the range some well stuffed kit bags are an excellent substitute for a rock. It is not always possible to shoot from cover from the right shoulder, shooting from the left shoulder should, occasionally, be practised.

In all target practice it is advisable that a time limit should be fixed, because a long aim is seldom practicable under battle conditions. A time limit is specially necessary in recruit's training.

Time limit.

It is doubtful whether shooting at a bullseye target is the best training for any soldier. Such a target is doubtless practical for testing a rifle, and may be so for match shooting, but would seldom if ever be found in war. In fact the aim at the bullseye is different to that required in aiming at almost any other conceivable object. Moreover the soldier is taught to aim at a bullseye, and if he hits it well and good, let him get points, but under the present system of marking he gets points when he does not hit it. This does not appear to be quite practical. If he fires at an enemy he must fire to hit, to go near what he aims at will not much benefit. In all firing the men should be impressed from the beginning with the idea that he can only either hit or miss the enemy.

Regulation targets. Our collective and field practice targets answer this requirement, though the former are too large. In order that individual practice targets should do the same, khaki targets might be made, to vary in size for the different classes of shots at each range. The recruit and third class shot would thus have a large target; the second class shot, at the same range, a smaller target; the first class and marksman finally firing at a target little if any larger than the present bullseye. Shots striking the target would count a hit, others a miss, just as would be the case on service. Men would thus be taught to judge their elevation and direction from watching the impact of the bullets on the ground, just as they must do on service.

If iron targets, constructed to fall when hit, are used, the practice would prove interesting to the firers.

A reward of small value per hit would ensure careful aim. The reward should vary in value according to the class of target, a marksman's hit being more valuable than that of a second class shot, and so on.

The simplification of the present elaborate system of marking which would ensue, is a great desideratum.

The war has shown the necessity of training men not to fire, unless they can see an enemy to fire at, or, at any rate, unless their leaders, looking through glasses, can direct their fire on to an object visible to the men in the enemy's vicinity.

Controlled independent.

For this reason, if for no other, skirmishers should always work in pairs, so that one may "spot" when the other fires. This class of firing might well be given the name of "Controlled independent" in contradistinction to the "rapid independent" used in the last stage of the attack, or against an enemy suddenly appearing at close quarters, or against a cavalry charge. Since it has been found of little use and even inadvisable, to fire volleys except for range-finding, it may be best to substitute "controlled independent."

If the necessity for saving their ammunition, and for watching the effect of their firing, be impressed on the men at all times, it will be found that the system of "controlled independent" above described will tend as a check on the waste of ammunition; since every man in action will know that each shot of his is being watched by some one.

For practical training it is useful to have events open to teams of two men, their combined score to count towards merit, one to "spot," while the other fires, the men to fire alternately.

The golden rule for efficiency in rifle shooting is to practise continually; but it is a fact, which is recognised in our musketry regulations, that the annual Government allowance of ammunition is insufficient, and must be supplemented by a great deal of private practice. The soldier cannot afford private practice unless he can obtain ammunition cheap; he also requires encouragement in the shape of prizes.

It is the endeavour in some regiments to induce every man in the regiment to fire at least seven rounds monthly in private practice. This sounds a modest ambition, but it is unlikely that, in future, owing to the loss of lead caused by firing off the range, and the high price of .303 ammunition many native regiments will be able to afford even this.

Although rounds, hitherto wasted in teaching men to fire simultaneously, may now become available for practical training, still it may be necessary to give some assistance to the rifle-clubs of native regiments, in order that the present standard may be maintained, and improved upon, in the future.

The chief requirement in musketry is marksmanship of a practical order; by which is meant not only accurate long-range shooting at practical targets but also accurate judging of distance and spotting, quickness of eye, and ability to shoot from cover and take quick aim. A reduction of the time, energy, and ammunition at present expended in mechanical exercises in favour of their application to the practical training of the individual would be necessitated.

XVI.—THE PERSONAL EQUATION IS STILL OF VITAL IMPORTANCE.

Amongst the lessons taught, or made conspicuous, by the Boer war,

Lessons of the war.

there is one that is specially important. It has been made clear that the British soldier has not deteriorated as a fighting man, and that the British

regimental officer is still a peerless fighter, leading the soldiers with gallantry and devotion. Again and again battalions, and other units, that have been subjected to severe losses, have faced the most terrible fire with unflinching courage, which no bad fortune has been able to subdue.

In spite of capitulations, which cannot be understood and must be deplored, it will be generally allowed that the conduct of our officers and soldiers has, on the whole, been magnificent.

The war has proved, contrary to the prognostications of M. de Bloch and others that, in spite of the effect of smokeless powder rapid fire guns, and other conditions of modern warfare, the courage of the individual soldier has a practical effect—the personal equation is still of vital importance. The saying of Clausewitz that “the first quality of a good soldier is courage, and the second capacity for enduring fatigue” has been proved to still hold good.

The difference in the conditions of service in India between British and Native troops demands that, in considering the effect on their practical training which this lesson should bear, they should be dealt with separately.

But there is one condition which is common to both services, namely, the distribution of units and detachments as opposed to their concentration in divisions, or large bodies, in healthy localities, or at hill stations, where the physique of the troops would be unimpaired, their practical training advanced, and where our generals would obtain something more than a fleeting opportunity to practise war movements. In England, before the war, Salisbury Plain was acquired for the purpose of manœuvres, and, since the war, Salisbury Plain has been found too small, and the necessity for manœuvring troops in large bodies so imperious that a Manœuvre Act has been passed to permit of large scale manœuvres. In India we have not only to consider this imperious necessity for the practical training of troops in large bodies, but we have the further overpowering consideration of the personal equation, the physical well-being and development of our soldiers.

May we not venture to hope that concentration may eventually be effected by the substitution of police in some places, the construction of railways or formation of bicycle corps in others, and the abolition of detachments in all.

The British soldier, in the majority of cases, is debilitated by residence in the plains. He is confined to barracks during the day all through the hot weather. He would be much happier, and consequently fitter, if he had some employment, but he has no incentive to look after himself; all is done for him.

Too much sleep, or inaction, must dull the intellect and faculties, and render the body unfit. They are an incentive to the commission of excesses, especially amongst the more energetic.

In the artillery and cavalry the men, if they do what they have to do, and do not pay natives to do it for them, have far more work than in the British infantry. They have, generally speaking, healthier stations and units, are not split up (although further concentration is very desirable); they are consequently fitter, happier and better behaved.

Fortunately the early training and disposition of Englishmen is such that idleness does not usually come

Sports.

natural, nor is sloth congenial to the majority. The gymnasium, football, hockey and cricket are readily taken up by the men. Sports provide a safeguard against the deterioration which would in their absence be more serious. They strengthen the muscles, train the eye, engender a spirit of fellowship between all ranks, and act as an incentive to men to keep their bodies in temperance, active in wind and limb.

They are in many ways better than compulsory training. Unfortunately, in a large body of men, all cannot compete equally on account of the unequal distribution of attainments; and many are too lazy to exert themselves unless obliged to do so.

The sailor has to swab decks, and keep his ship clean, and do everything for himself, hence afloat or ashore he is a "handy man."

Self-help.

Why should not the soldier do things for himself, and keep his own barracks clean? The objection, that he would be looked down upon by the natives if seen sweeping his own lines, is one that will hold good with no thoughtful person, for the lesson most needed by the native of India is that all honest work is honourable.

Such considerations as the above lead to the conclusion that our soldiers should not be treated like children, but should be trained in the practical school of self-help.

It should not require another medical theory to rid barracks of all native followers including tent-lascars, but excepting bhitis and bhangis.

Soldiers must, moreover, be trained for the second quality—a capacity for endurance. In the Talbot

Endurance.

Papers, vol. IV, fol. 161, we read that the farmers and householders of England in the year 1589 "which have been daintily fed, and warm lodged, when they came thither to lie abroad in the fields were worse able to endure the same than any others" When we consider that the casualties from sickness in the British army in South Africa approximate, numerically, half the whole force which the Boers could put in the field, we cannot but fear that our soldiers of to-day bear some resemblance to the farmers of 1589, and that some hardening process for cultivation of staying power is desirable.

The habit commonly prevalent in these days of hurrying through a field-day to get back to breakfast should be abandoned. Field exercises cannot, with

Practical training.

profit, be hurried through. When the weather is fine in this country a bivouac is no hardship.

In order to render our men capable of enduring fatigue they should have constant training in long marching, and should bivouac frequently, during the drill season, and hot weather.

Commanding officers can either arrange with the Commissariat Department, or obtain sanction to make their own arrangements, and it would often be possible to go as much as three days without transport and so without extra expense to Government.

Some employment should be found daily for all men who do not play games or otherwise keep themselves fit.

The native is by habit a lazy man, though capable of undergoing great exertions and privations on occasion.

The native soldier. Time appears to have no meaning for him, he is extremely patient and very inaccurate. It is not possible to imbue him with the quickness, the smartness, the weight and the dash of the Britisher. But he can shoot well, and can march very well, and has little difficulty in provisioning himself, and looking after himself generally. He thus answers the requirements of mobility. He is endowed with a hunter's powers of sight, and some of his instinct for finding his way. But cohesion and mutual support do not come natural to him.

The characteristic faults of the native are faults of omission rather than commission; it is in little things that he is constantly failing, trifling peccadilloes for which the procedure of military law is not readily adaptable, and which nothing but the watchful eye of an experienced officer well in touch with his subordinates, can bring to light, or keep within bounds. On the other hand, he will follow a trusted officer faithfully to death.

For no army in the world is it so needful that the officers and men should know each other well, and perhaps in no army are the regimental officers so often changed, or away from regimental duty, as in the native army.

It is very difficult for British officers to keep thoroughly in touch with the native soldiers under them, but any Sports. officer will find that there is no nearer way to win the trust and confidence of his men, and to learn to appreciate their virtues and their failings from a just standpoint, than by playing games with them, and giving up his spare time to them. Any games which will foster the spirit of comradeship, and the power of working together, are useful practical training.

The guard, orderly and detachment duties are so heavy in the native army generally, that it will usually Heavy duties. be found difficult to get together a good team for any purpose; even the annual sports on the "regimental day" must frequently be abandoned, because men are not available to make a successful meeting. In certain portions of the native army the excessive guard and orderly duties seriously affect the efforts made towards efficiency.

It is not to be expected that men can be physically or professionally fit for field service who are on guard or orderly duty every fourth and sometimes every third day. The native thinks that he is paid for doing guard duty, and that all his other work is more to fill in the off days, than for any practical purpose. Native regiments are tied to cantonments by their guard duties; it cannot be easy to give practical instruction in battalion manoeuvres under such circumstances, nor can it be doubted that the fighting power and efficiency of the individual, which the Boer war has proved to be of vital importance, does under such circumstances deteriorate.

The only apparent remedies for this state of things are that regiments should be made up to a strength of 1,100, that they should not be divided in detachments, and that police guards and chaprassies should be employed for those duties for which they are suitable. By this means the practical training of the native army may be for war.

Lastly, but not of least importance, the war in South Africa has shown, as no previous war has shown, that the officer must be something more than a peerless fighter. He must be a practical soldier, thoroughly conversant with every detail that concerns his men. He must have a knowledge of modern war, and how to prepare troops for it, and breadth of mind to enable him to draw distinctions between the important and the unimportant, and to shake himself free from past ideas and practices inapplicable and unsuitable to-day. It must be admitted that the lesson of the war in South Africa point to the necessity for more out-door training, and more intimate acquaintance with the best methods of giving practical effect to orders in the field, on the part of our officers.

It is not more examinations that are required, but a larger field of opportunity for the officer to prove himself a practical soldier; more encouragement to the regimental officer; and a more practical system of inspections

Work in the field can only be learned by daily practice in the field. In fact practice should not limp after theory, as is so often the case now, but theory should arise from practice. As Milton in "Paradise Regained" truly said:—

"He who reads, and to his reading brings not
A knowledge equal or superior, remains
Deep vers'd in books, and shallow in himself."

Only by co-operation at work or at play, on the march, in camp, in bivouac, in difficulties and in dangers can an officer gain a working knowledge of the men he leads, and of his duties in the field. Only thus can the men learn to trust their officers, not only because it is their duty to do so, but because they know and recognise the fact that these are indeed qualified to be their leaders.

It is well when such experiences are formed before the commencement of war.

CONCLUSION.

If, in the course of this essay, it may have been shown that our practical training lags in any degree behind the times, it remains to be considered how such a condition, which is apparently unavoidable so long as training is dependent on superannuated drill-books, may be avoided in future.

With this object in view the suggestion is made that a committee of suitable officers be assembled annually, to consider and report on the practical training of the army in India for each past year, and, with due consideration of the advances of science, military and technical, to issue rules for the curriculum of training of all troops for each ensuing year.

Each year see changes in arms ammunition or other warlike appliances, and consequently in the conditions of war. When practical training does not keep pace with science the preliminary experiences of war give rise to rude awakenings, as in South Africa—where, for months, we could but say that we had been “wounded not conquered.”

LESSONS FROM NATURE FOR USE IN WAR.

BY CAPTAIN R. G. BURTON, 1ST INFANTRY, HYDERABAD CONTINGENT.

It is matter of common knowledge that hunters of wild beasts are generally adepts in the minor tactics and stratagems of the art of war. This fact is frequently exemplified in history, and has been borne out in most recent times during the war in South Africa. The successful artifices and cunning exhibited by the Boers are without doubt in great measure due to the fact that they have been in the habit of hunting wild animals from earliest youth, and to their mode of life in a country where they constantly learn from the book of nature, and obtain lessons from savage men and savage beasts to whose natural habits they have become accustomed to adapt their stratagems. The phlegmatic Dutchman is not particularly sharp by nature, and since acquired characteristics are not inherited, it follows that the native cunning of the South African Dutch is entirely the outcome of individual training and of the survival of the fittest. Such being the case, we might well take a leaf from their book, and study those methods which have conduced to perfect them in guerilla warfare, and the exercise of which, if combined with a quality of courage and military discipline, which they do not possess, would render a people, as near as possible, invincible in war.

The life of the hunter cannot fail to conduce to the acquirement of habits of observation, and that invaluable attribute known as an 'eye for country,' which are among the most useful qualities of the soldier. To these may be added the habit of rapid decision, the power of endurance, and the ability to 'rough it,' which are acquired in such a life.

There are in addition many things to be learnt direct from nature which the dweller in cities has no chance of acquiring. A knowledge of the seasons when and localities where certain useful natural products may be sought for will be acquired, together with some skill in the detection of places likely to hold water, and in the signs of the weather and other matters too numerous to specify. Moreover the hunter of dangerous game learns to meet peril unflinchingly, and his nerve becomes strengthened by constant use.

But it is perhaps from the animals themselves, against whose cunning he pits his skill, that he learns most, and it is in pursuit of them that he gradually assimilates that knowledge of woodcraft which is so valuable to the soldier and especially to the scout. Let him watch the stealthy feline approach its prey and he will learn, as a scout should learn, how to approach an enemy unobserved. No better example of how to take cover can be adduced.

Let him observe the stag or Indian bison standing motionless in the jungle on the approach of danger, but betrayed perchance by the impatient flicking of an ear when otherwise invisible, and he will learn to remain motionless and concealed in a situation where the slightest movement would at once betray him to an observant foe. The observation of animals in retreat also teaches us some useful lessons in the art of taking cover. Watch the alarmed gazelle bounding off across the undulating plain or over the low hills. The animal will halt at intervals to observe the movements of its pursuer, but it will generally stop behind a bush or other obstacle that at least partially conceals it from view.

The hunter soon learns to keep the rising or setting sun at his back when approaching his quarry and to adopt the tactics of wild animals keeping behind cover when he may be observed by the creature he is trying to get near. It is instructive to watch a party of scouts, or soldiers under training, cross a ridge of high ground or mount to the summit of a hill. The majority of them will climb straight to the highest point, and stand in silhouette exposed to the gaze of enemies for miles around; but those who are accustomed to hunting will be careful not to expose themselves on the sky-line, but will keep behind a bush or rock or other object that will protect them from the view of possible enemies.

An eye-witness of the fight at Gausimas in Cuba, where the rough-riders were in action, during the Spanish-American war, relates:—"It was easy to tell which men were used to hunting big game in the West, and which were not, by the way they made their rushes.

"The Eastern men broke at the word, and ran for the cover they were directed to take like men trying to get out of the rain, and lay panting on their faces, while the trappers and hunters slipped and wriggled through the grass like Indians, dodging from tree-trunk to tree-trunk and from bush to bush. They always fell into line at the same time as the others, but they had not exposed themselves while doing so." This is exactly what is required under the conditions of modern warfare, and men thus trained will, in most localities, aided by their eye for ground, be able to approach within decisive range of an enemy's position with but little loss. It is not by firing at a bullseye or by drilling on the barrack square that excellence of tactical methods are to be attained; the qualities of a soldier are best brought out and fostered in the field, in the forest, and on the veldt or prairie.

In one thing wild animals are singularly incautious, that is in the matter of tracks or footprints, for they prefer to walk along a path or on soft ground where the spoor is easily seen, and in this respect we can learn from them what to avoid and also what to observe with regard to the important science of tracking. The experienced sportsman will at once discern many signs to tell him whether tracks are fresh or not, and this power of observation and the habits acquired of being constantly on the alert cannot fail to be of use not only to the scout but to every soldier in time of war.

The observant eye of the hunter will read in the vicinity of the pool of water which he visits in the morning the whole history of the night's events. The book of nature lies open before him and in it may be deciphered all the comings and goings of the beasts of the field. There is a beaten track of many dainty little feet, the marks of the gazelle and the larger spoor of the antelope. The pugs of the panther may be looked for upon any of the paths that approach the drinking places, and their measurements may be taken in various spots to ascertain if there is more than one of the species in the neighbourhood.

The porcupines, most nocturnal of creatures, have come down from their cave-dwellings in the banks of the dry ravines and in the hill-sides, and one has dropped a quill on the margin of the pool. Jackals, wild cats, foxes, hares, partridges, quail—all these and many others have been down to the life-giving fluid and have left unmistakeable impress of their presence. At one point the panther has crouched and crept towards some animals, stalking his prey. Then he has made a rush, but his intended victim has escaped him; this was evidently a buck gazelle which has galloped off from the place in alarm. All this—and much else of the history of the silent watches of the night—can be read upon the dusty path, and on the surface of the soft earth of the field that lies crumbled into powder under the heat of the sun.

But hark! a peafowl is giving the trumpet note of alarm in that deep ravine to whose shady depths the sun's rays have not yet penetrated. There must be water there, for these birds seldom wander far from it, and the panther whose footprints were seen leading in that direction has evidently passed up the nullah. The call of the peafowl is taken up at the head of the ravine, indicating the route of the beast of prey. All these are useful lessons and teach a man to use his reason and his wits.

The value of the instruction derived in the chase of wild beasts has been recognised in the Russian army, where detachments of scouts are annually sent on hunting expeditions. In a previous paper in this Journal I have directed attention to the value of shikar as a training for scouts, and to the advisability of employing on such service those men who are proficient in sport. In the meantime much may be done by encouraging excursions in pursuit of big game. On these excursions men would acquire the habit of shifting for themselves, and would learn all the expedients of camp life, whilst a genuine spirit of comradeship would be established during the chase or when assembled in the evening to discuss the past day's adventures, or the next day's prospects. For such expeditions India offers peculiar facilities, abounding as it does in wild animals and varied country. Whether amid the snows of the Himalayas, on the rugged mountains of the north-west frontier, or the burning plains of Central India, or in those deep forests of Burma where no sounds save those of nature strike upon the ear, and where the wild beasts wander in peace over untrodden solitudes, the scout would encounter danger and learn to be indifferent to it; he would become accustomed to

take his life in one hand and his rifle in the other and to look death in the face without flinching, whilst hard work and exposure would inure him to the vicissitudes of campaigning, and he would acquire a facility in overcoming obstacles and despising difficulties, and would become acquainted with the inhabitants, and the country over which he ranged.

But in order to facilitate such expeditions and to enable us to make full use of the lessons of nature which lie ready to hand, some encouragement must be given to men who are addicted to such pursuits, by granting increased facilities for obtaining leave during the shooting-season, and by removing the obstacles that are placed in the hunter's way by local officials both in British territory and in Native States, and by making use of their services where they would be most valuable in time of war.

MARCHING BY THE STARS.

BY MAJOR T. E. COMPTON, NORTHAMPTONSHIRE REGIMENT.

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I

These notes are the outcome of observations made at Barkacha Camp in January of this year.

Since then working in Latitudes 27° and 31° I succeeded in arriving at scales and formulæ to roughly determine the bearing of any celestial body at any moment of time, but I soon found that with purely arithmetical formulæ, absolute accuracy was impossible and that the deviation in other latitudes was greater than I thought permissible although the mean error hardly exceeded 1° .

Without then abandoning my formulæ altogether I have now relegated them to a subsidiary place and have decided to work out the true hour angles and bearings of 100 stars for the first two of the three categories into which I have divided the heavenly bodies.

These computations when completed will be tabulated and while ensuring accuracy in my method they would greatly facilitate its application.

The working out of these tables will take time and one or two points in connection with the correct adjustment of the scales (by scale, I mean the movement in bearing during a given time, each half hour, for example, of any celestial body) in the different categories are still under investigation; but the main principles of the problem I set myself to solve have been established and a description of how it may be possible to march on a bearing at night without a compass may be of some interest to the members of the United Service Institution of India.

I desire to express my thanks to Mr. John Eliot, F.R.S., C.I.E., the distinguished head of the Meteorological Department and Director General of Government Observatories in India, and also to Mr. Michie Smith, the Government Astronomer, Kodaikanal Observatory, for their help and guidance.

I do not mean to assert that a compass should never be made use of at night: on the contrary with the third category I think it would often be almost a necessity if it were required to march on a bearing for any distance, on account of the continuous lateral movement of stars in the category, but it is not required in order to find the bearing of a star at any particular movement of time.

Were the method, which in the following pages is put forward as a practical scheme, to be introduced into the service as a subject of

instruction, the compass would certainly on occasion be a valuable adjunct.

The chief object I had originally in view was to produce formulæ entirely independent of spherical trigonometry and of such a simple nature that any soldier with a first or second class certificate of education could apply them.

The method of marching by night on a bearing by the aid of an illuminated compass is a very slow one, especially when, as is usually the case, no light of any kind is permissible during any part of the march. Could we use the stars as guides, the rate of movement might be very much accelerated.

On the plains of India, Egypt and in South Africa the sky is for a great part of the year perfectly clear and woods are scarce and in these countries therefore this mode of marching by night might, it was thought, be practised with advantage.

Although a trial was made at Barkacha, I cannot claim yet to have tested the method practically, but I should think that combined with the compass the stars would enable a march to be conducted twice as fast as with the compass alone, and when under certain favorable conditions which will be hereafter explained no compass is needed, the rate of marching should be at least three times as fast.

The above remarks refer to using a star to march on a bearing across country, but it often happens that a regiment or column has to make a night march where the ground is to some extent known and where roads and tracks can be followed at any rate during some part of the march.

The direction of these roads or tracks could always be found by reference to the stars or the direction checked and the bearing of branch roads determined. In fact the commander could as it were keep himself oriented throughout the night by a knowledge of the stars and of the application to which they can be put, by a method the outline of which it is the purpose of this paper to explain.

In the Southern Hemisphere where there is no bright star to mark the position of the South Pole as Polaris marks the North Pole this knowledge should be especially serviceable.

I do not of course mean that the commander himself should apply the method; he would have too many other important things to attend to. Some one under his orders would be detailed for the duty.

Again a star may be of use in another way. Where clouds obscure the heavens so that the North Star and Northern Constellations cannot be seen, if only one star of the first magnitude be visible and can be recognised (which is, as a rule, not difficult) by calculating its bearing at that hour from the tables, the cardinal points of the compass are at once known.

I do not propose in this paper to go into much detail. To do so would make the article too long and without every detail more

thoroughly explained would tend to confuse the subject, and although the method is equally applicable to either hemisphere, for the sake of simplicity I shall chiefly confine myself in this explanation to the Northern Hemisphere.

Owing to the motion of the earth on its axis, the heavens appear to revolve round a point in the sky which in the Northern Hemisphere is now close to though not identical with and Ursæ Majoris (Polaris).

The effect of this apparent movement is that in whatever part of the Northern Hemisphere the observer may be, looking towards this point of pole, the stars to the north of him appear to make generally a convex movement, whereas looking in the opposite direction, the arc which a star appears to make is concave.

The accompanying diagram* will explain what is meant. It will be observed however on looking at the diagram that some stars may rise North of the observer and moving eastwards, as regards bearing, pass to their meridian South of the zenith, X, Y, X¹ and which therefore make a concave movement round the observer.

I have therefore divided the stars into three categories.

(1) Stars with a N. Dec. (*i.e.*, their position in the heavens is north of the Celestial Equator) greater than the latitude of the observer which in the diagram is identical with the Zenith.

(2) Stars with a N. Dec. less than the latitude of the observer.

(3) Stars with a S. Dec. (*i.e.*, their position in the heavens is south of the Celestial Equator).

The movement which stars of the *first* category appear to make is convex.

The movement which stars of the *second* category appear to make is as shown on the diagram, *i.e.*, they rise North and pass south of the observer to the meridian and then again pass north as they sink towards the horizon.

The movement of the *third* category is concave.

The movement of the third category (southern stars) is simple enough. To an observer looking south they rise in the east, *i.e.*, on the left hand, and pass gradually over to the west, their bearing increasing continuously.

This increase though not regular is calculable and I hope to prepare scales by which the approximate bearing of any southern star at any moment of time can be known.

By scale, I mean the number of degrees (or the angular distance) that a star moves in an hour or half hour.

These scales would be constant for any latitude.

The disadvantage with this category is that they are always in comparatively rapid movement, and except when about $1\frac{1}{2}$ hours from the horizon it would require a practised hand to direct the march of

Fig I

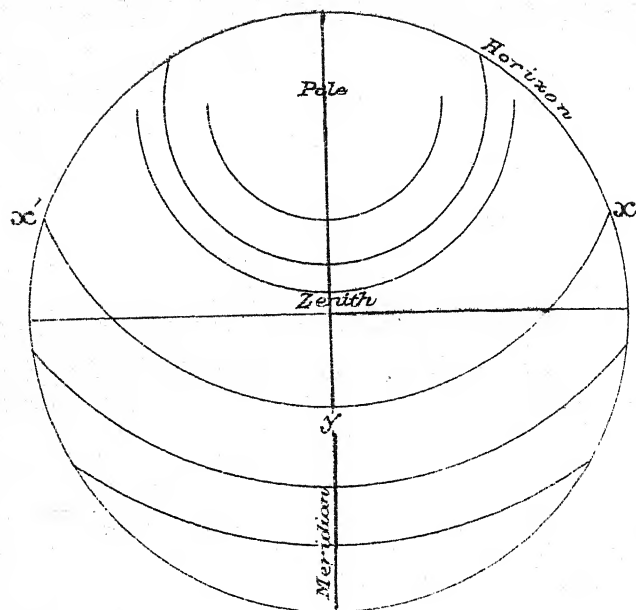
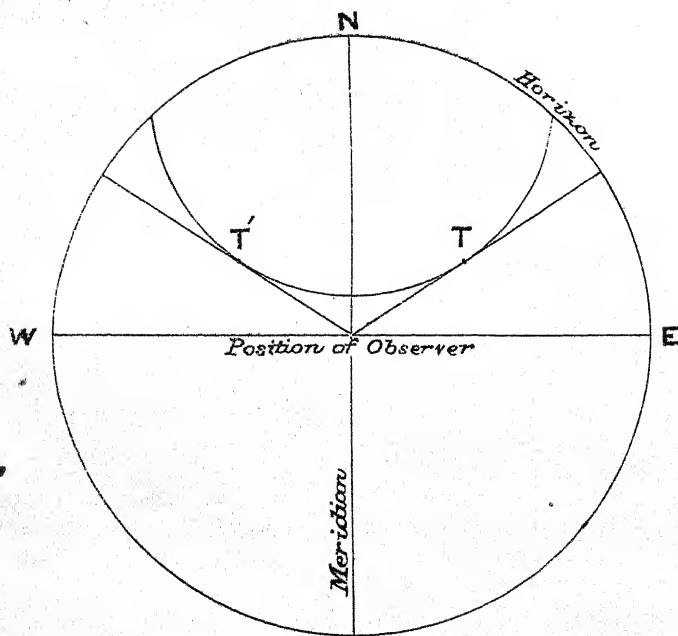


Fig. II



a column by this means on the required bearing with any exactitude without the help of a compass. About 1° to 2° in 20 minutes is their average rate of movement in bearing in their first or last hour and a half from the horizon as a general rule and in this position they would be of great use.

I may here remark that in the Southern Hemisphere the categories would be reversed and the category of stars, the movement of which I have just described, would in the Southern Hemisphere be composed of stars north of the Celestial Equator or stars with a north declination.

I have dealt with the third category first because it is the simplest.

The movements of the first and second categories are somewhat more complicated and the application of the formulæ and tables would also perhaps give a little more trouble, but both have certain features connected with their movements which more than compensate for that trouble.

Indeed it is with the first category that I believe the greatest results will be obtained in applying the stars to night marching when no compass will be required at all and the march accelerated accordingly.

I will, however, take them in order and as I began with the third will now describe the second category.

These stars it will be remembered, the declination of which though N. is less than the latitude, make a concave movement round the observer. Their bearing 6 hours before meridian is known being equal to their N. polar distance.

(As the bearing of all stars 6 hours before meridian is practically equal to their N. polar distance, and at 6 hours after meridian their bearing is practically equal to 360° minus their N. polar distance).

The bearing therefore of a star of the second category 6 hours before and after its meridian hour is known and its bearing in meridian is also known, *viz.*, 180° , it remains therefore to find the hour when it is due east or 90° and due west or 270° .

Scales can then be worked out to determine its approximate bearing at any moment of time.

I have prepared a formulæ to determine the hour of the night when these stars are approximately due east and due west (the tables will give it exactly) and scales to determine their approximate bearing (error less than a degree on the average) at any moment of time up to their second hour from meridian. For the first hour their movement in bearing is too rapid to render it possible to use them.

The peculiarity of this category is their comparatively slow movement in bearing before they arrive at the East and West line. It is evident that as at 6 hours a star bears its polar distance* (when rising)

*Note.—In the first and second categories stars generally bear a little more than their N. P. D from 3° to 5° in the higher latitudes.

This is all to the observer's advantage because the star varies so much the less, in bearing from the tangent and east and west line respectively.

the angular distance it has to pass over before it reaches the East and West line $= 90^\circ - \text{P. D.}$ but its declination $= (90 - \text{P. D.})$, therefore the angular distance it has to travel between P. D. and due East $(90^\circ) = \text{its declination}$.

Now, for example, let us say a stars' declination is 12° . In latitude 17° the time from meridian when it will be due East is about three hours. It is therefore clear that it has to traverse an angular distance equal to its declination in 3 hours from P. D. to due East. $\frac{12}{3} = 4^\circ$ in one hour on the average. Where the declination is less it is evident the average rate of movement will be less.

The movement of these stars up to the East line (and from it in setting) is very regular and as this movement is slow they offer themselves to our use as guides while in this position.

Before passing to the first category I may perhaps with advantage explain to those who have not thought about it that the hour of meridian of any star is found by subtracting the right ascension (R. A.) of the sun for that day from the right ascension of the star or from the right ascension of the star plus 24 if the R. A. of the sun is greater than that of the star. This little formula can be expressed thus:—

Meridian hour $= \text{R. A.} - \text{Sun}$ or $(\text{R. A.} + 24) - \text{Sun}$, *e.g.*, Arcturus, 1st July, 14 hrs. 11' — 6 hrs. 38' = 7 hrs. 33'. Arcturus is on the Meridian at 7 = 33 p. m. on the 1st July.

I now come to my first category and from which I hope for the greatest results and with regard to which I am sanguine that when its nature is understood opinion will be favourable.

In the latitudes for which the method is primarily intended, *viz.*, 1° to 34° a very large proportion of the stars are included, increasing of course as we near the equator, and although I propose to deal briefly with the application of the method further on with a view to encourage my readers, I will here record the fact that at Barkacha Camp in January of this year a brigade was actually marched for 3 miles over rough ground by a star in this category successfully on to the point of assembly, α Andromedæ was the star and 284° the bearing.

Looking at diagram (Fig. 2) it will be seen that a star of this category moves eastward, *i.e.*, its bearing increases up to a certain point of its arc, which I will call T, from which point it decreases until the star arrives on the meridian, where its bearing will of course be 0° or 360° . From the meridian again it moves westwards and its bearing decreases from 360° up to a certain point which I will call T' and which is at the same angular distance from the meridian as T. Thence its bearing increases until in India with one or two minor exceptions it sets.

The points T and T' it will be noticed represent the maximum and minimum bearing of the star before and after meridian respectively.

Now the great peculiarity and great advantage of the category is this: that when a star is in or near the position indicated in the diagram by T or T' the apparent movement of the star is very slow indeed.

The rate of movement varies somewhat according to the latitude and declination of the star; but for about 2 to 3 hours it will remain at very much the same bearing and this is obviously exactly what is required for making use of it successfully and easily in night marching.

It is necessary however to determine this bearing and also the hour of the night when a star is there.

Looking again at the diagram (Fig. 2) it will be seen that assuming all lines and circles are in the same plane the star arrives at the points T and T' at the moment when the line from the observer's eye to the star is tangent to the circle it appears to make round the pole.

I therefore prepared two formulæ:—

- (1) to determine the hour when the star is tangent to its circle;
- (2) to determine its bearing at that hour.

These formulæ and the formulæ for category (3) are approximate up to 34° of latitude which is the latitude of the Cape, 30° being the latitude of Cairo and 33° that of Peshawar. This includes the whole of India and Africa.

As stated however at the beginning of this article the formulæ will be subsidiary to the table giving the true hour angles and bearings of 100 of the most brilliant stars for every combination of latitude and declination.

The handbook which I hope to be able to publish later on will be for use up to latitude 34° only. Should it be favourably received the scope could be enlarged in subsequent editions.

In concluding this description of the theory I must apologise to those of my readers who understand astronomy. Diagram Fig. 2 and the convex movement is a pure convention. This problem is expressed astronomically thus:—"To find when the azimuth of a star is greatest and its motion vertical the declination being greater than the latitude" and the true formulæ are of course trigonometrical. But I trust my convention may be allowed to pass as a simple way of explaining the method to persons totally unacquainted with astronomy or trigonometry and, after all as the hour angle of the vertical motion is equal to hour angle of the supposed tangent and the greatest azimuth is equal to the tangent bearing, the results will be the same.

II

I will now briefly consider the application of the method.

In the first place however simple may be the theory and however easy it may be to apply the formulæ and tables where the stars are known, it will still be impossible for any one to make use of them if he does not know one star from another.

Some people seem to think it is difficult to learn the stars so as to be able to identify them. All I can say is I did not find much difficulty myself single-handed and I feel absolutely certain that by the aid

of the simplest star charts, all the stars of the first and second magnitude can be *taught* in a week, *i.e.*, those that are then visible in the evening.

That all the stars cannot be soon learnt I readily agree, for several months must elapse before they all can pass before an observer *working only in the evening*.

Moreover an observer in northern latitudes will not be able to see stars further south than 90° from his zenith and *vice versa*; but once an interest is evoked and the mode of comparing charts with the sky is understood, I hardly think much teaching would be required, at the same time if it is to be taught at all it should be treated in the same way as signalling or range-finding and regimental classes formed under competent instructors.

If a class lasted a month the men of that class should be assembled once a fortnight afterwards throughout the year when the skies are clear.

Supposing it were required to march at some angle N. of the celestial equator, say in a west-north-westerly direction bearing 285° about 7-0 P. M. on the 1st January in Lat. 25° .

The table of 100 stars would first be referred to to see if any prominent star is available at that hour in category (1) and in practice an Andromeda or Pegasus star would be looked for.

In star calculations however the first thing to do is to put down the right ascension of the sun for the day. This varies by about 4 minutes daily, increasing from about hours 18-45 on 1st January to 24 hours on the 21st March and then from 0 hours to 24 hours again on the following 21st March when it will again be 24 hrs. It loses 1 minute a year, but leap year equalizes matters, so that it is never more than 18 hours 47' on the 1st January and never less than 18 hours 42'.

The exact R. A. is given in the Nautical Almanac published yearly, but my hand-book would contain a sufficiently approximate table for the calculations required.

On the 1st January 1902 therefore R. A. Sun = 18 hours 44'. In Latitude 25° the data of α Andromeda are as follows:—R. A. 0 hr. 3'. Hr. Angle of tangent 2' hrs. 3 m. Bearing 284° (after meridian) consequently 5-19 P. M. (24 hrs. 3 m.—18 hrs. 44 m.) is its meridian hour, adding the hour angle 2 hrs. 3 m. to the meridian hour we get 7-22 P. M. for the Tangent hour and the bearing is 284° .

At 7-22 P. M. therefore Andromeda bears 284° and it is *stationary* within 1° at this bearing for an hour.

Starting at 7 P. M. it would be quite possible to march with this star as a guide on a bearing of 285° for two hours.

Towards 9 P. M. when it would be moving perceptibly northwards bearing about $286\frac{1}{2}^\circ$ it might be kept a little on the right hand.

Again Vega in Lat. $17\frac{1}{2}^\circ$ (Secunderabad) might have been used on the 1st June, for example from 8-30 P. M. to 10-30 P. M. at a

bearing of 55° with a mean error of about $\frac{1}{2}$ a degree, and even from 8 P. M. to 11 P. M. if in this case the star were kept about 1° on the left hand for the first and last hour.

Arcturus in Lat. 10° , as another illustration, when near its tangent (half an hour on each side) varies by only about one-sixth of a degree in one hour which for all the practical purposes of this subject is *stationary*.

If no star in the first category were available on the date and in the latitude required, a star in the second category might be found which would give the bearing desired.

Here again in practice the stars available would be known from observation and the hour at which they were due west would have to be calculated from the formulæ: the tables would then give the rate of movement after passing the East and West line.

This as I have before explained is very slow and although not so absolutely perfect as a star in the first category a star of the second category would be found a reliable guide.

Supposing however it is required to march at some angle S. of the celestial equator. On the 24th December at 7 P. M. in latitude 25° say in an east-south-east direction on a bearing of 110° then a star of the third category must be looked up.

The data of Rigel (β Orionis) is—

R. A.	...	...	...	5 hrs. 10'
South Polar Distance	...	...	...	82°
Bearing at the 4th hour	...	...	...	111°

The meridian hour of this star on this day is 11.1 P. M. (5 hrs' $10' + 24$ —8 hrs. 9') and at 7.1 P. M. therefore it will be 4 hours from meridian.

Its rate of lateral movement is about 2° in a quarter of an hour and therefore at 6.53 P. M. it would bear about 110° . At 7 P. M. it would bear about 111° and at 7.15 P. M. about 114° for the lateral movement increases as it moves towards the meridian, and the star must now be kept well on the right hand.

It is evident that it could not be used much farther as in a little over 20 minutes it has moved 4° and the rate of movement is increasing.

But the practical way to make use of stars in this category is to take them in succession and in this case a splendid object, the most brilliant fixed star in the heavens would now be appearing in our line of march.

At 7.15 P. M. on this day and in this latitude Sirius bears about 109° and as it has not yet reached its 5th hour it is moving very slowly close to the horizon.

At 7.30 P. M. it would bear 110° and at 8.0 P. M. not more than 113° , so that say we began the march at 6.45 P. M. we should have marched for one hour and a quarter by the aid of two stars using ordinary intelligence on a very approximate bearing of 110° .

For a short march any southern star on the horizon not immediately south may be taken as not moving more than 4° in the hour, as those with the longer arcs near to the East and West are in their 5th hour and those further south with shorter arcs are in their 3rd or 4th hour and the result is about the same.

Those immediately south would be in their first hour and moving perhaps 8° . For example Centaurus and the Southern Cross in Latitude 20° .

But except on the horizon each star moves at a different rate proportional to its S. P. D., or inversely with its declination, and in order to use them successfully their rate of lateral movement must be known.

To summarise the foregoing: assuming the tables to be compiled required the bearing of a star at 8-0 P.M.

The successive steps would be as under:—

1st—Look in the tables and find what category it is in.

2nd—Find its meridian hour, say 3-45 P.M. Then at 8-0 P.M., its hour angle (time from meridian) will be 4 hours 15' ($8-3\frac{3}{4}$) or in other words, it will be in its 5th hour from meridian moving towards the horizon.

3rd—(A) If the star is in the first category its tangent hour and tangent bearing will be given in the tables, say 3 hours 50' and 289° . From what has gone before it is clear that the star is practically till on its tangent and could be used on a bearing of 289° for one hour, the bearing slowly increasing.

(B) If the star is in the second category the hour when it is due west (hour angle) will be found from the tables and its approximate bearing at 8-0 P.M. will be found from the scale for that hour angle.

(C) If the star is in the third category its approximate bearing will be found from the scale for that star recorded in the tables in half hours, *i.e.*, if, for example, the star is Sirius and its bearing at 4 hours and 4 hours 30' west of meridian is found recorded as 244° and $247\frac{1}{2}^{\circ}$ respectively, its bearing should be proportionately about 246° .

Conversely, given the bearing, the hour could be found proportionately from the tables in the same way.

It does not do to ride a hobby to death and I do not claim that marches can always be done by the stars under every condition of time and direction.

You might wish to march at an hour of the night when no stars were available for the particular bearing desired. You would then have to start off with the compass and perhaps later on in the night I might be able to help you with some stars.

You would probably not have gone very far.

I have endeavoured to treat of the stars in this paper strictly from the practical utility point of view; but there is it seems to me

another although quite a subordinate one which merits a passing notice.

The education this fascinating subject affords is something the soldier might take back with him into civil life of value not indeed measurable in £ s. d., but as a resource, as a refuge for the mind among material surroundings.

Signalling, range-finding and other exclusively military courses while quickening his natural abilities are purely technical and cannot be deemed mental recreations.

The science of astronomy of which this is, as it were, the alphabet, the first introduction, is the most transcendental, while in all its accepted data the most mathematically exact of all the physical sciences, carrying the mind back by the very names of the stars to the mythical histories of Greece and Rome, of Babylon, to the beginning of things. Stirring the imagination by the vastness of its issues in time and in space, by the possibilities it seems to open out to man that he may some day unlock the closed doors that bar him from the unseen and from the infinite: and yet with all this, scientific in the best sense.

Thanks to the genius of the great Newton who discovered order and method where all had once been chaos, the daily and nightly phenomena of Nature are no longer the mysteries they were in the days of Greece and Rome, but approved and certain facts which every child ought to know and which, if only for the sake of Truth which all nations profess to worship, should be taught, I humbly submit, as thoroughly and as far as the established religion of the land.

These facts and the civilising influences the soldier who had been trained for night marching might take with him into civil life and teach to his children.

SOLDIERS' HOMES.

A PAPER READ BY BRIGADIER-GENERAL SIR REGINALD C. HART,
V.C., K.C.B., AT THE LAHORE DIOCESAN CONFERENCE, 1901.

I hope the audience will be lenient on the shortcomings of this paper, because I have not set myself up as the champion to plead the cause of Soldiers' Homes. There are many who could acquit themselves better ; but I could not refuse the request of the Lord Bishop to prepare a paper on the subject to be considered at the Diocesan Conference at Lahore. I fear I can only just break the ground, and that it would be more profitable to hear what Miss Sandes, Miss Schofield, Miss Ashe, Miss Shaw, Miss McGuire, and other Soldiers' Home ladies have to say.

It will be conceded that the main object of these homes is to make the private soldier happy ; to relieve the loneliness, the dullness, and the monotony of his exile and isolation ; to keep him from evil influences ; and to help brave men to resist temptation and vice, or, in the words of the Bishop of Lahore—" to afford the men the opportunity of spending the evening in some rational and pleasant occupation, while at the same time they are brought into contact with the refining influences of ladies." I am persuaded that the homes do tend to help the men to resist vice, and do encourage them to lead pure and blameless lives. The efforts to attain this object have been remarkably successful, because the philanthropic founders have understood how to make the homes attractive to the rank and file.

In barracks much has been done for the comfort and welfare of the men ; and our military institutes and Army Temperance Association rooms are excellent, and have made many happy and contented ; and they have introduced considerable refinement in military life. But men like a change ; they like to get away for a time from the restraints, or supposed restraints, and the monotony of the regimental surroundings ; and therefore they flock to the city and bazaars, where enterprising tradesmen do their best to provide entertainment sufficiently attractive to draw many from the institutes ; and I suppose it is due to ignorance that the men so often risk their lives by eating and drinking without fear or hesitation what they can get so much better, and often cheaper, in their own lines. I have inspected outside places of refreshment that could not be compared with those in barracks ; and yet the men resort to them, but not in such numbers at Quetta as I have seen elsewhere, probably because the Home gives a higher class of accommodation than exists in the city. Indeed, no man of refined habits and tastes would enter most of the city refreshment places, which are entirely outside the direct control of the general. But I had lately to put them out of bounds to protect the men from enteric fever ; and the medical officers considered that it checked the spread of the disease.

It would be impossible to exaggerate the good done by the Army Temperance Association rooms ; but, no matter how much we may develop them, the Soldiers' Homes are none the less necessary. Undoubtedly the homes intercept many men who would otherwise go to the bazaars. Why do they intercept them ? I think only because the homes are far more attractive than the bazaars to a great number of men. This seems to be well understood by the Soldiers' Home ladies, who know human nature with its weak as well as its strong points ; and they study the soldier in particular, and know how to please him.

But, how do they please him ? I think the great secret lies in treating him like a gentleman and a rational being, and not worrying him with more restrictions than are absolutely necessary to ensure peace, quiet and harmony. It has always been my experience, and I could give many instances, that the private soldier behaves like a gentleman if he is treated like one. If I had a park I would allow the rank and file to walk in it, with every confidence that they would do no harm to game, flowers, fruit, or anything else. In the regimental institutes the non-commissioned officers must necessarily at once check any irregularity. In the Home military authority is neither necessary nor desirable. Drunken men often turn in at our Home, but they are not turned out ; and I have heard of these same men afterwards behaving like gentlemen, and returning to apologise and ask pardon. Miss Sandes and other ladies say that they have never known a soldier treat a lady otherwise than with respect, no matter how drunk he may have been. The watchword of Miss Sandes's Home is "Welcome." Everyone is welcome. The worse the man, the more welcome he is. If you ask me what is the great difference between private soldiers and officers, who appear so exactly alike in fighting dress, I should say that it is a matter of education and of refinement. The private soldier is brave, patient, devoted, and enduring, and he is a kind and loyal comrade ; but in some cases his language is very coarse and bloodcurdling. Well, do not the homes do much to eliminate this difference between the officers and the men, and bring them into closer sympathy ? Soldiers are naturally chivalrous and polite ; and no soldier would commit such a brutal outrage as to use coarse or foul language in the presence of the ladies of the Home. But I think, if he did, his comrades would give him reason to bitterly regret it.

I do not wish to be misunderstood. The soldiers are treated with every kindness and consideration in the regimental institutes, but, unfortunately, among so many men there must necessarily be a few black sheep, and it is in the interests of all that order should be maintained, or life would be rendered hideous by rowdy men ; and discipline requires certain restrictions. Soldiers no doubt draw a distinction between their own institutes and the Home where they feel instinctively that they are in the presence of ladies, and that their conversation and manners must be such as is expected from all men when a lady is present. Of course, a large proportion of the rank and file behave with becoming manners wherever they may be. But, sad to say, there are a good many men who are addicted to drink, and a very

few who then behave like ruffians. These are the men who may give trouble in the institutes and, strange to say, I am told that these men find attractions in the Home, and still more strange to say, they seem to know they are in the Home, and put restraint on themselves. A sort of public opinion seems to regulate the behaviour of the men, so that no rules appear to be necessary. The homes are very attractive in offering many of the advantages of clubs, and the men feel a sort of "plain clothes independence" that is very pleasing; and there are many who highly appreciate the refinement of the surroundings. Here they can turn in after football, and for a small sum have the luxury of a hot bath. They can have their refreshments well served; write their letters, read the papers, smoke, and play games in perfect peace and quiet, and without the off chance of being fallen in as an escort to a drunken and violent comrade. It is always hoped by the founders that the homes keep men away from vice. I hope they do. Many men say so, but it would be difficult to give a positive opinion upon the amount of good they do in this respect. At all events, the surroundings and associations are all healthy and pure, and tend to refinement and virtue. Many men at Quetta have said:—"I have never drunk a drop since this place was opened;" or, "I have been a different man since this Home was opened." The homes have been described as "a home away from Home." The Homes in the United Kingdom are a harbour of refuge amid a sea of public houses, dens, and low places of amusement, that swarm with land-sharks that ever watch for their prey—the furlough men on their way to their own real homes. There are men wise enough to remain in the streets all night, rather than sleep in any of the public houses. This is all wrong:—we should have homes at every place where soldiers have to stop, because at some towns soldiers are subjected to the insult and indignity that no respectable place will receive them. Civilians should understand that the average British soldier is very different in language and manners from what he is described in certain vulgar songs and ballads. He speaks as good English as most people, has nice manners, and is essentially not a vulgar man. When he enters a Home for the first time, he is shy and makes himself at home only by degrees. For some days he will perhaps only venture into an outer room, but he gradually extends his explorations. He is very fond of music and singing. In one part of the building hymns are sung at certain hours, and many soldiers attend who do not profess to be at all religious. The men are not pressed, or even invited, to attend meetings; but they do attend in large numbers of their own free will.

There are not many ladies who have the time to go to the Home, and very few who have the courage to face such a number of men, but a few at Quetta very kindly do go to the Home, and play the piano or play chess; and their kindness is greatly appreciated. It is not generally known what help it is to send newspapers and magazines for the soldiers, whether to the Home or barracks.

Miss Sandes has founded eleven homes in Ireland and four in India. What a reproach to India to have only four of Miss Sandes' Homes with its 75,000 British soldiers!—Quetta, Rawal Pindi, Murree and Bareilly (only a temporary one). There are a few other homes, but I regret I do not know anything about them. How nice it would be if there was accommodation at healthy stations, where soldiers could spend their furlough and be welcomed at homes. I am utterly out of sympathy with people who say:—Oh, if you bring the soldier here, you will spoil the place. These people do not mean to be unkind, but they are thoughtless and do not know the soldier, or they would not express such a sentiment. At Quetta Miss Schofield, Miss Shaw and Miss McGuire manage the Home; and it is a real pleasure to the private soldier to be able to speak to a lady. These ladies devote their whole time to the well-being of the soldiers. Men have said that except to these ladies, they have not spoken to a woman for many years. We have to realize how completely the private soldier in India is cut off from any society except that of his comrades.

Home-sickness—Nostalgia—is a very real and recognised ailment that causes intense mental pain and misery to fullgrown men as well as to children. The private soldier, like everyone else, loves the gentle sympathy of women, and he gets that from the kindhearted ladies with whom he converses in the homes. Many a strong-minded man positively yearns for the tender love and sympathy of one who will interest herself in his sorrows. At home he has a mother, a sister, or a sweet heart.

Sympathy goes straight to the heart. The Lord Bishop of Lahore is full of sympathetic kindness for men—Europeans and natives—and is "struck by the need which exists for more and more organised women's work amongst the British troops." I believe His Lordship has struck the key-note, and that these homes must be managed not by men but by women—by "ladies of a high type, who have been specially trained for this work." The great charm of the homes would vanish if managed by men, and that there are ladies of sufficient administrative capacity willing to do the work. Where funds are subscribed responsibility comes in, and we must have the usual reports and balance sheets. I would suggest that the ladies of the proposed new homes should report direct to the Bishops, who would periodically visit the homes. I would not insist on a stereotyped system of working the homes. I would leave the general management to the ladies in charge. I would place the new homes neither under the generals, the chaplains, nor any committee of management; but, of course, nothing in cantonments can be quite independent of the generals.

Institutes managed by men sometimes get into difficulties over accounts: therefore, why not when managed by women? Consequently the responsibilities of the Bishops would be great, unless assisted by ladies of businesslike capacity, who could visit the Homes from time to time; and the accounts should be carefully audited.

A point to be liberally considered is a provision for ladies whose life's work is over, or whose health may break down. I think there

are ladies who would unselfishly do the work for nothing, and others who would ask for a mere subsistence allowance ; but " the labourer is worthy of his hire," and it would be a reproach and a great wickedness, if any lady should be left in destitution in her declining years. I do not wish to be ungenerous, but I greatly fear that if ladies received more than a mere subsistence allowance, we might not get the high type of devoted workers we now have. At present I believe no lady could work in the homes without private means, unless helped by her sisters in the Homes. This arrangement has so far worked well, but I have been amazed that these ladies give not a thought to the future : however, that is no reason why we should not do this amount of thinking for them, and make the necessary provision for their declining years. The ladies of the homes give the soldiers all their time, all their strength, and, in many cases, all their private means. They work gratuitously, and the work is hard, very hard : even, as a labour of love, they set a truly noble example of self-sacrifice.

With regard to raising funds, it must be remembered that the country is rich, but officers are mostly not so : their pay has so many calls upon it that many cannot make both ends meet. I therefore think it would be necessary, and just also, to expect non-military sources to supply most of the funds. I feel sure that many civilians will respond liberally as they have done in the case of the " Soldiers' and Sailor's Help Society." Indeed, I think the managers of the proposed Church of England Homes should be in close connection with this society, which might perhaps give some assistance. Though called " Church of England " Homes, I take for granted that men of all religious denominations would be equally welcome, as is the case with Miss Sandes's Homes. Government might be approached, because the homes deserve support, like the Army Temperance Association deserves it.

I agree with His Lordship that not less than two ladies should be together ; I should like to say not less than three ; and facilities should exist for rest and change to the hills, or even to England. Do not let us even suggest overdriving the willing horse.

The Government of India might be moved to entitling the ladies to medical attendance.

It has always seemed to me that there is not nearly sufficient ventilation in our institutes, theatres, Army Temperance Association rooms, or homes. It is very unpleasant and unsanitary to remain long in such crowded places of assembly, breathing over and over again the same impure atmosphere : I cannot quite call it air.

The homes should provide more privacy for men who wish to talk alone. It is a question of expense to avoid over crowding. Small tables to accommodate only two to four men are so much appreciated, especially if the grounds admit of refreshments being served out of doors in the warm weather.

If funds do not at first permit of full-sized buildings, the plan should be such as to facilitate a future expansion. The Quetta

Home is a fine large building, but not nearly large enough for the great number of men who flock to it. I should like to see it enlarged, and the compound was far too small, but this defect I have fortunately been able to rectify, because we want plenty of space outside for gardens, trees, gymnasiums, and games; also space where, by and by, sleeping rooms might be built, and where meanwhile we can pitch tents for furlough men, whom we expect in great numbers.

The homes should be sufficiently well endowed to enable them to undersell the refreshment place in the bazaars.

For my part, I always recommend hard drinker and men in prison to try the Home, and talk to the ladies there. In our prison, every single prisoner is confined for crime that can be traced to drink, and drink alone, because the very rare cases of theft are associated with a craving for liquor. If it was not for drink, the country would be saved the great cost of prison establishments. The Soldiers' Home ladies very kindly visit the prison, and their visits are eagerly looked forward to. In this way an attempt is made to reform men who have lost what we all most prize—our liberty. Their influence over the patients in hospital is also very beneficial.

I have never said one word in disparagement of the homes, but I used to think that some men might perhaps consider them at times a little dull. It seemed to me that the quiet amusement of playing chess and draughts was all very well in its way, but high spirited young men sometimes like more fun—more boisterous fun—but I found I had received a wrong impression from my visits, and that there is plenty of hearty laughing and noisy fun. Undoubtedly there should be plenty of music and singing. At one time I could see no harm in billiards and cards, but I have made inquiries and changed my opinion, not because these games themselves are wrong, but because I am told that so many men will gamble at these games, and we ought to disapprove of gambling.

I cannot avoid some reference to religion. The ladies who are associated with the homes are deeply religious, and I think the hope of making soldiers religious is the great joy of their lives; and it is this hope that sustains them under the fatigue, discouragement, and disappointment of much uphill work, and enables them to keep cheerful in a life of constant good-byes. Miss Sandes has written:—"From my earliest recollection the vanity, and sameness, and littleness of life oppressed me. But now I had found an object worth living for, an aim, a purpose. Life thenceforth was full of intense interest and great joy, for I, yes I, was a co-worker with God!" It seems to me that these are the sentiments of the ladies who devote their lives to our private soldiers; and theirs is not an aggressive religion, if I may use the term. Miss Sandes says:—"We do not force religion on the soldiers who attend our homes. We think that by doing so we should defeat our own ends. We try to make our coffee-rooms inviting, to make our Homes bright and homely." And in this they entirely succeed, because they themselves are so bright and homely, and they give each visitor such a hospitable, and cheery welcome.

But why do these ladies leave their own homes and their own people to live among soldiers, and even to go into exile in India, and to pay instead of being paid for their work? I can only give Miss Sandes's answer :—"The one and only reward we seek and get is, to help you to win you to Christ."

Some people have asked me if I do not think there is too much religion connected with the Home? I cannot pretend to answer this question; the men must answer it for themselves. But I will say this—the ladies who work in the homes are eminently fitted for the work, and as they are unpaid, voluntary workers who have produced such grand results, we should leave very well alone, and let these noble women manage their own business without too many crude suggestions from those who have no practical experience of the working of the homes, and who cannot be in such close touch with the inner life of the private soldier. The men will open their hearts to a Soldiers' Home lady, whom they sometimes address as "Mother," in a way they will not do to anyone else; and I feel persuaded that the ladies of the Home will not bring forward religion more than is wise and prudent. This question of religion is a very important one, and if the homes would do more good by excluding religion, it should be excluded; but I will quote from Miss Sandes, with her lifelong experience, who says :—"Sometimes I am told that our homes would be more popular, more successful, if the religious element were excluded. I believe they would, even from a human standpoint, be dead failures. The power of God in this work is the real secret of success. If God were excluded what could we say to poor, helpless victims of sin, and drink, and vice, who come to us continually and ask, 'is there any power that can save and keep me pure'? They have tried to conquer of their own will power, good resolutions, and earnest endeavours, but they have found sin too strong for them. Thank God! we can point them to an Almighty Saviour. If we could not do that we should have no heart to go on in this work."

Only think of Miss Sandes having no heart to go on in this work! After knowing that, I feel sure, that if you decide to exclude religion from the homes, you will exclude also ladies like Miss Sandes and her fellow-workers, who will do their good work elsewhere. But how would you propose to replace them? I, for one, do not know.

I will dismiss religion by saying that history teaches us that in all ages, armies composed of God-fearing men have always been the most formidable.

It would be very pleasing if the homes could do something for the happiness of the women and children. The soldier's wife has a very dull life in India. I do not think it desirable to encourage the wives to leave their own homes for excitement; but a good deal might be done in the way of tennis courts, the lending of bicycles and children's libraries, etc.

Very many have tried to help the rank and file in South Africa, but Miss Sandes says the best for soldiers has been done by the men themselves. "It is they who have brought strength and comfort to

many a comrade with whom they have fought side by side, and their influence for good is tremendous."

Before concluding, I will repeat that the homes should be entirely managed by ladies who will take the place of the mothers and sisters who are at home. We know that, in peace and in war, the thoughts of the men dwell constantly on the home they have left. Someone has said that "the power of gentleness is irresistible." Miss Sandes truly writes that "soldiers very readily respond to sympathy and kindness, and herein lies our advantage as women." Another cause why these ladies have so much personal influence over soldiers is by reason of their unselfish love for others. And no one reciprocates, in fuller measure, love for love, gentleness for gentleness, than the British soldier, who is ever grateful for any little kindness or consideration. Napoleon said that a man owes everything to his mother. The power of women for good or evil is immense.

I have been extremely busy with my duties, but I consented to write this paper, because I have a keen love and respect for the rank and file, and I thought it would be obliging the Bishop, but now that I have finished my task, I would put it all the other way, and say that the Bishop has greatly obliged me.

Lord Wolseley has written to Miss Sandes :—"I only wish I were a rich man, for if I were, I would enable you to carry out your good work on a large scale." I can only hope that men who are rich will be moved to enable the good work to be carried out on such a scale that every garrison in the world, and in India in particular, may have a suitable Soldiers' Home. If ever I go to war again, I hope some of these noble Soldiers' Home ladies will accompany the troops to the base, to cheer and comfort them in their hours of trial and suffering, and to rejoice with them in their times of joy.

In conclusion, I deem it a great privilege to have been asked to help the Bishop of Lahore and Miss Sandes in their good work, for the welfare of my comrades and friends of the rank and file.

SOME NOTES ON GUNS ON RAILWAY MOUNTINGS.

BY LIEUTENANT-COLONEL R. F. JOHNSON, R.G.A.

During the war in South Africa we have had the following guns on railway mountings, *viz.*:—

(1) 9'2 inch B. L. gun of 22 tons; (2) 6-inch Q. F. guns, (3) 12-pr. Q. F. guns; (4) 37 mm. Maxims ("pompoms"); (5) Maxim machine guns, and I believe (6) 4'7 inch Q. F. guns, but I do not think the last have been used even if they have been tested.

(3), (4) and (5) have been used for the armament of "armoured trains" and (3) seem most admirably suited for this form of service as two can be mounted on a single truck and an all-round fire can be obtained from them. They were mounted at opposite corners of the truck and there was plenty of room for the ammunition in the truck, which seems essential for an armoured train. Probably a difficulty in this respect would be a drawback to the arming of armoured trains with 4'7 inch Q. F. guns, and their length would prevent more than one gun on one vehicle, which is a disadvantage their greater power would seldom outweigh in the rôle of armoured trains.

Incidents in the early part of the war indicated that the rôle of armoured trains is not reconnaissance, but they have frequently been of use in patrolling the lines between defended posts.

The construction of the armoured trucks has been improvised and therefore far from perfection. On the truck with the 12-pr. Q. F. guns the side behind each gun was raised, which protected the detachments from reverse fire but unduly limited the arcs of fire, which seems of more importance. With a roof, which would be desirable in India, it should be possible to have a system of shutters hinged to the sides for use when required. The positions of the pivot mountings and the roof supports would have to be carefully arranged to prevent the supports interfering with the arcs of fire.

A Maxim machine gun on a moveable mounting, for which room could be found in the truck, would be a great increase of strength for fighting at close quarters, or for defence in case of injury to the truck.

The mounting of 9'2" B. L. and 6" Q. F. guns on railway carriages, which I believe we owe to the suggestion of Lieutenant-Colonel Girouard, R.E., Director of Military Railways, and to the ingenuity and resource of Captain D. Paul, I.O.M., A.O.D., and Mr. Beattie, of the Locomotive Department, Cape Government Railways, is a new departure or great advance in the use of heavy guns.

The 9.2" B. L. gun was mounted on an old pattern high angle fire carriage and slide two buffers from a 7-inch mounting being added. The slide was pivotted on a girder between two bogies, admitting of the centre of gravity being kept low, and traversed on plain trucks running on flat racers. At the experiments the gun was fired at an angle of 19° from the normal giving an arc of fire of 38° . It was intended the gun should be pumped out after firing, but the buffer used broke down and tackle had to be used. This gun was taken from Cape Town to Machadodorp, a distance of 1,201 miles, a special train being formed with six trucks of ammunition. The gun and carriage weighed 49 tons. Owing to an axle-box running hot the journey upcountry was very slow, but on the return there was no delay owing to the carriage. There was no opportunity of using it in action, as the one occasion when it might have been the rails did not admit of the gun being trained in the direction required, and when it was intended to move it, it was found that the great length of the carriage, 49 feet, would prevent its getting round some sharp curves in deep cuttings.

The gun, as could not be expected otherwise with an improvised carriage, could not be reversed, and so care had to be taken that it should travel muzzle forward. This on changing on to the eastern line at Pretoria necessitated the carriage being placed on a turn-table, but the length of the carriage very nearly prevented this. It does not seem impossible to have arrangements for reversing the slide, and Captain G. T. Nicholson of the Cape Garrison Artillery, who was in charge of the gun, has suggested a means, but, for reasons which will be noted later, it is doubtful if it is wanted.

The two 6-inch Q. F. guns were on their pivot mountings placed on a combination of a 4-wheeled tender frame and a bogie. They could be reversed, but at the experimental firing they were only fired at an angle of 15° from the normal, and I do not know if it has been found that a larger arc of fire can be used. Their centre of gravity was higher than that of the 9.2" gun. They were successfully used at Warrenton.

The Boers on one occasion shortly before the battle of Diamond Hill fired one of their 6-inch guns from a railway truck. It was on its field carriage anchored with a buffer.

In the case of the 9.2" gun the necessity of keeping the centre of gravity low combined with the 3 feet 6 inch gauge of the South African lines, limited the elevation obtainable, an important point in which the 3 feet 9 inch and 5 feet gauges of India will admit of much improvement. But the extra inches of gauge are not likely to give much greater arcs of fire. Railways also as a rule run parallel to rising features of the ground which form tactical positions, and their curves are not planned with a view to meet tactical situations. Therefore to give these guns serviceable arcs of fire it is necessary to lay down curved sidings on which to fight them. Again, although, if long pauses in the advance take place, and the lines run on the surface, as they do to a great extent in South Africa, the

"rail-head" may be in the front line of the attack, still as a rule it will be well out of range. Of course, if the attack of positions is to occupy days as some prophets tell one, it may be possible to lay sidings and bring up such heavy guns, but then the railway will only bring them to one point in the inevitably long line, unless the battle is close to a junction. For these reasons I think these heavy guns on railway mountings are weapons for defence and not offence.

For defensive purposes they are most useful at any post on the line of railway and in fortresses, when the lines serve. In other ways you cannot move such pieces at all during active operations and their numbers must be very restricted, but to be able to support the work on the side attacked by even one such gun must be of great assistance both morally and materially.

I do not myself think that guns so mounted can in any way replace the guns of the fixed defences of a harbour, because if you move your gun from place to place while fighting ships, you give up the advantages in ranging, etc., which a fixed position gives the shore gun over that on a ship. But in the neighbourhood of all fortresses there are points, which it may be desirable to be able to defend to prevent landings or land attacks, which from distance or other reasons cannot or had better not be included in the permanent perimeter of fortification. I know of one if not more such cases in India, where these guns could be used and would greatly strengthen the defence. Even inland and upcountry the power of bringing a 9.2 inch gun to bear might keep a turbulent city quiet.

If a heavy gun on a railway mounting does form part of the armament of a fortress or post the sidings for it should be made permanently, because if they are left to be made when required, the ground may greatly limit the use of the gun, for hasty sidings must leave the main line where its level coincides with the surface level, and as often as not, that is not where the gun is required. Also if the siding is permanent arrangements may be made for facilitating the supply of ammunition; in some cases magazines may be provided and the ammunition kept on the spot. Cover may also be formed, which must be very heavy work. Two lines are desirable in the siding, even if the main line is single, as it will enable the ammunition trucks to be placed alongside the gun, and without that the supply must be slow.

As the exact position on the curve of the siding, when firing, will depend on the direction of fire, it will probably not be possible to use any anchoring arrangement to stop recoil, and also the gun will have to be moved according to the direction. Therefore the engine used must be able to run on the siding. This was brought to my mind when arranging for sidings for the 9.2 inch gun at Pretoria. The gun carriage could move on a very much smaller curve than any of the engines sufficiently powerful to haul it and its ammunition trucks over the inclines in the neighbourhood.

It should be easy for any mechanical engineer to design mountings superior to the improvised ones used in South Africa, and the

designer for India starts with the advantage of gauge. The following are a few points to be kept in mind to ensure against "unexpected" difficulties.

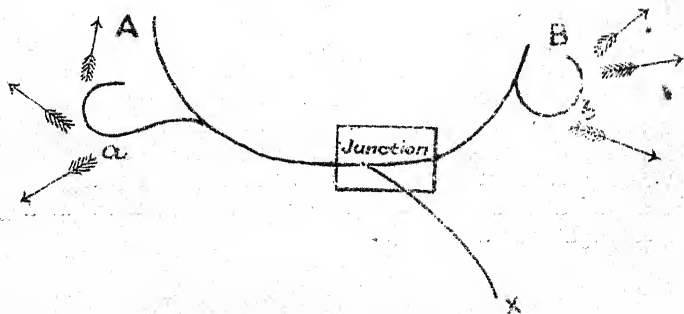
A. The line or lines of railway the carriage has to run on—

- (1) The clearance between the outer rail and platforms or bridges. The 9'2 inch carriage fouled a low platform between Cape Town and Simon's Bay.
- (2) The curves, especially in cuttings. The 9'2 inch carriage could not proceed on one occasion through being too long.
- (3) The grades. If the grades at all great there should be strong travelling brakes as well as those used to check recoil.
- (4) The side of the turn-tables. This is only necessary if the gun cannot be reversed, and is not so then if it is only intended for use in one fortress, as the carriage can be reversed by arrangement of the sidings.¹
- (5) Probably several other points that would occur to a railway engineer.

B. The gun and gun carriage—

- (1) The lower the centre of gravity the larger the arc of fire possible.
- (2) The gun should be capable of elevation for the whole of its effective range.
- (3) The gun should traverse and run out easily and quickly.
- (4) The more recoil that is absorbed in the buffers the better.
- (5) There must be facilities provided for the rapid handling of the ammunition.
- (6) For travelling the gun must be securely fastened to prevent any lateral movement.
- (7) The muzzle of the gun must of course be inside the buffers of the railway carriage.

¹ A gun, non-reversible, is brought up from X to the junction, muzzle forward. It may be wanted to fire on lines A and B in the direction of the arrows. The sidings a and b admit of this, the engine pushing out to a and pulling out and past b and then pushing into b. But if the gun has to go muzzle first out beyond B, the carriage must be turned.



AMBULANCE WORK IN INDIA.

BY MAJOR A. C. YATE, 2ND BALUCHIS.

Proposed lines of organisation.

The tentative plan which I have formulated in my mind is this:—

1. *Organisation*.—Similar to that of the St. John Ambulance Association in the British Isles and Colonies, with such modifications or developments as are suited to India. The Indian Section or Branch will be entirely self-supporting, as are the Home and Colonial ones. It will be subject to the general control of the Central Executive Committee at St. John's Gate; otherwise it will be self-governing. It will work, under the ægis of the Government, for the education and weal of all classes, in time of peace. In time of internal distress, such as Plague or Famine, it will co-operate with Government in the work of relief. In time of war it will work, under the management of a Central Indian Red Cross Committee analogous to that of the Central British Committee at the War Office, in co-operation with the Army Medical Services for the aid of the Sick and Wounded; and, as required by the present terms of the Geneva Convention, its *personnel* and establishment will be attached to, and serve under, the Army Medical Department in the field.

N.B.—The Association and the Brigade are two entirely distinct bodies. The Association educates, supplies material, and conducts the transport of the sick or injured from place to place for long distances. The Brigade organises "First Aid" and "Nursing" Corps and Divisions, and details parties to attend all great gatherings where accident may occur. In India it might further organise Ambulance Transport Corps, Stretcher-bearer Companies, and also, perhaps, Companies of Ward Orderlies. *This work, in peace-time, is their preparation for war*; and it is this preparation that has enabled the men of the S. J. A. A. to recently acquit themselves so well in war.

2. *Management*.—The Central Executive Committee will be established at Simla. There will be Provincial and District Committees at Calcutta, Madras, Bombay, Lahore, Lucknow or Allahabad, Rangoon or Mandalay, Mount Abu or Ajmer, Poona, Jabalpur, Secunderabad, Bangalore, Quetta, Peshawar, Rawal Pindi, etc., etc., and in all the important Native States which take the work up. Minor Committees will manage each Centre of the Association and Division of the Brigade. The "Heavy Woollen District Centre" in England is a good sample of the organisation adopted at Home, and may be used as a general guide for organisation in India.

3. *Stores.*—Bombay appears to be the best place for the Central Store Depôt. The establishment of provincial Depôts can be considered later. At present, at any rate, all stores must be supplied from the head-quarters of the order. Later on, doubtless, most of them could be made in India, and thus help Indian industries. The text-books and all printed matter will have to be translated into various dialects. In this, probably, the Missions can be of assistance.

4. *Funds.*—The financial principle of the St. John Ambulance Association is that each unit finds its own funds. All Provincial Branches and Local Centres of the Association are self-supporting, as also are all corps and Divisions of the Brigade. Each has its own Treasurer and Bankers. A Reserve or Central Fund will, however, have to be formed at Head-quarters, where, if the work takes root in India, a paid clerical establishment will be indispensable, as also a store establishment in Bombay. Some sections of the work may have to be subsidised, at least at first; and travelling and translation work are expenses that can be at once foreseen.

5. *Object and Work.*—To train Europeans and Natives in First Aid, Nursing and Hygiene, to supply Ambulance material, to establish Ambulance stations in towns and industrial centres, to be ready at all times to attend cases of accident and injury, to attend all great gatherings of people and relieve the injured pending the doctor's arrival, and convey them, *without further injury*, to the nearest hospital or to their homes, to form Transport Corps and Ambulance Companies, and to give aid in time of War, Famine, and any other emergency or visitation.

6. The assistance of all Medical Officers and Practitioners is indispensable. Lady-doctors have a special sphere of usefulness in this work in India. The Order of St. John of Jerusalem is ever ready and prompt to recognise the services rendered to it by the Medical and Nursing professions, as Bombay, Poona and other places in India have experienced on several occasions in the last few years. The Order further endeavours, or will endeavour, to repay the debt it owes to the Medical profession by its services in time of National distress and War.

Medical Men and Ladies are needed as Lecturers, Examiners, and Honorary Surgeons. Each Centre and Division requires its own Medical Staff. The Native Medical Faculty of India is now, especially in the great cities, a numerous body, comprising able practitioners who can do much to disseminate Ambulance instruction among their fellow countrymen.

7. The sphere of work of the St. John Ambulance Association and Brigade in India will probably comprise:—

- (a) The Railways and the Police.
- (b) The Volunteers, notably the Railway Volunteers.
- (c) All Municipalities, and some Native Associations.
- (d) All Mining, Manufacturing and Industrial Centres.

- (e) Cantonments and Stations, Civil and Military.
- (f) Medical Missions and Dispensaries.
- (g) The States of Native Chiefs and the Imperial Service Troops.
- (h) The Marine Services.
- (i) Universities, Colleges and Schools.
- (k) India Army Regulations, Vol. II, lay down a specified course of "First Aid" and "Nursing" Instruction for European and Native troops. It may, however, be found convenient at times to let officers and men attend the St. John Ambulance Association classes, should they be going on at a suitable place and season, notably in the hills during the hot weather. These classes provide useful, rational and interesting occupation.

Notes.

- (a) No body of men can carry out Ambulance aid more efficiently than the Police, and on occasions the Fire-brigade, under Municipal control. This system prevails in London, New York, Liverpool, Birkenhead, Wolverhampton, Halifax, York, Wellingboro', etc. The Ambulance stations work in connection with the local Hospitals and are connected with them by telephone.
- (b) Ambulance trains must play an important part in all future warfare. It will be a great assistance if all or most railway men are trained either in first aid or nursing, or both. The continual accidents that occur on railways also demand this training. The great Railway Termini, centres and workshops, such as Allahabad, Delhi, Lahore, Jabalpur, Jamalpur and the Presidency Towns will be the natural centres of Ambulance instruction and organisation on Railways. The principal railways in Great Britain annually compete for an Ambulance Challenge Trophy. I hope to see the railways of India do the same ere long.
- (c) The National Indian Association in Bombay and Ahmedabad have commenced Ambulance Instruction. Mrs. Kazim Husain (L. R. C. P. and L. R. C. S. Edin.) has during the last few years held several classes under the St. John Ambulance Association at Allahabad.
- (d) By minimising the results of injuries the St. John Ambulance Association lessens the period of enforced idleness of an artisan or labourer, and thus saves his family from loss and distress and his sick Club from expense. It also reduces the compensation which employers must pay to their injured workmen. These considerations have, however, only a partial application in India, at least at present. The formation of Native Trade-unions and Working-men's Clubs are probably a mere question of time.

- (e) Under proper organisation members of one "Ambulance" or "Nursing" Division of the Brigade would, on transfer to a new station, be transferred to the strength of the District or "Division" of his or her new destination. *It is the want of this organisation that has hitherto practically nullified all the results of 20 years of disconnected and unsystematised Ambulance instruction in India.* In disciplined communities, such as the Railways, Volunteers, and Police, and in great industrial establishments a central governing force exists, but in the small floating communities of Indian stations it should be supplied by control from the Provincial or Head-quarter Centre in India of the St. John Ambulance Brigade.
- (f) The work of Missions is largely one of education. Ambulance instruction is at once a moral and practical education, that may tend to raise the level of the native standard of philanthropy, bring all races more in touch one with the other, and train the young natives of both sexes to habits more consonant with the principles of humanity and hygiene than those which at present characterise them. The St. Aidan's Mission at Pietermaritzburg sent to Sir Redvers Buller a contingent of trained Ambulance men, apparently natives of India.
- (g) In addition to the usual work of the St. John Ambulance Association and Brigade, Native Chiefs might organise :—
- (1) Companies of Stretcher-bearers.
 - (2) Transport Corps of animals trained and equipped for Ambulance Work, with vehicles attached.
 - (3) Hospital Corps or Companies, drilled and trained in Hospital and Ambulance Work.
 - (4) Transport Corps attachable to Hospitals. The mobility of Hospitals is all-important. The New South Wales and Irish Hospitals in South Africa surpassed all others in utility and independence, because they had their own transport and could go anywhere on the shortest notice. The good work done in the late Famine by the Jaipur and other Imperial Service Transport Corps was the subject of special remarks by the Viceroy in his address to his Council on the Famine. The Report of the Commission of Enquiry into the Hospitals in South Africa dwells specially on the hindrances that arose from Field and Fixed Hospitals not being adequately supplied with transport, and strongly advocates the augmentation of bearer ambulances. The Natal Volunteer Ambulance Corps, untrained as it was, was invaluable—*vide Treves' "Tale of a Field Hospital."*
 - (2) Public (to my knowledge, Eton and Shrewsbury) and, doubtless, other schools at Home have first-aid instruction. I believe it would be found a most valuable factor in the

State-aided education of India. Indeed it has, I am informed, been in some measure introduced into the curriculum of the University of Calcutta.

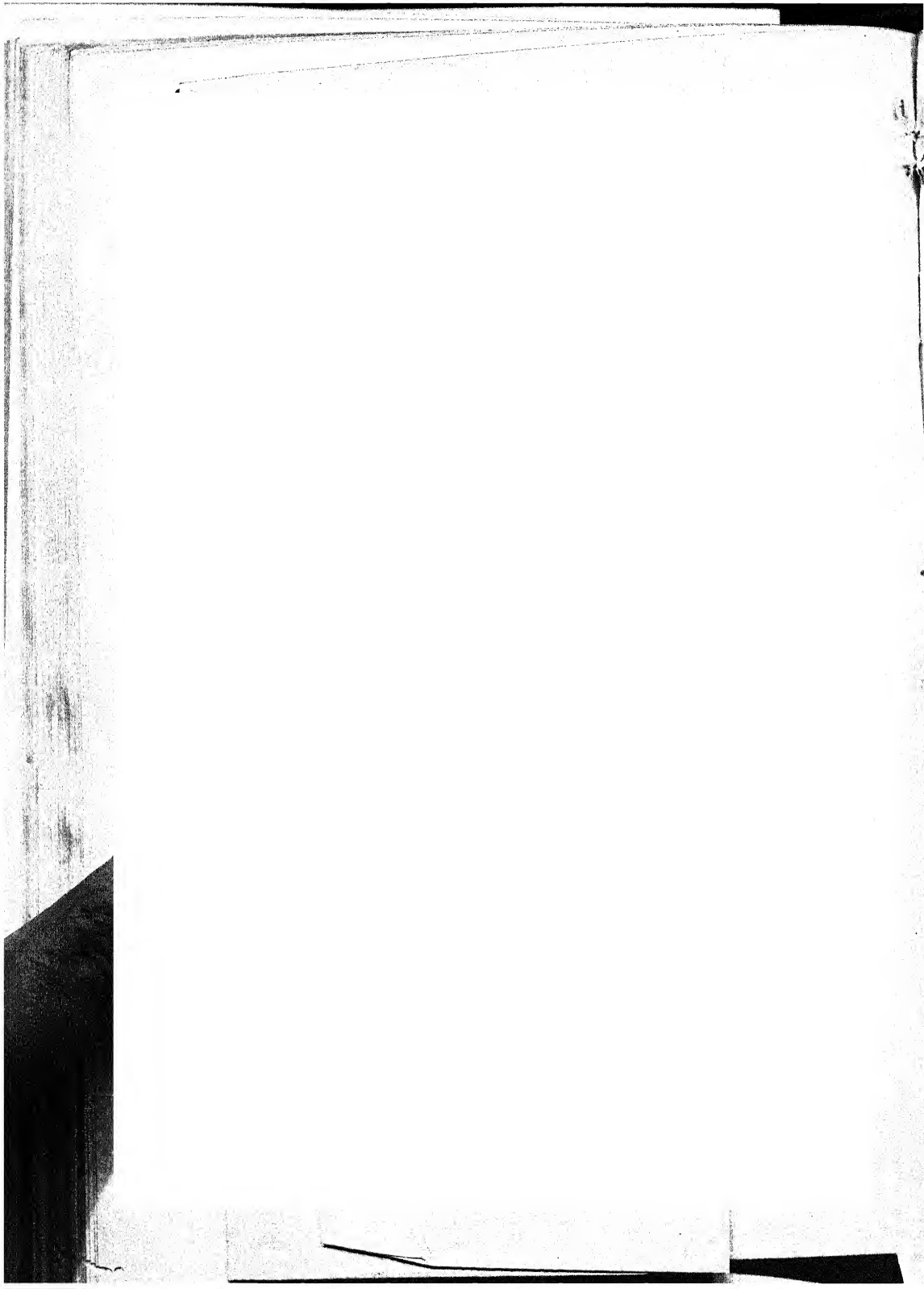
8. *Influence.*—The influence of Ambulance Work is beneficial to any race, for it inculcates sympathy and humanity. Its influence on the Native character ought to be most salutary. Distinctions of faith and caste are apt to warp and narrow the sympathies. The spirit that prompts "First Aid" ignores distinctions of faith and caste. The Knights Hospitaller of St. John tended Mohammedans as well as Christians in their Hospital at Jerusalem. The legend runs that Salah-ud-din (Saladin) himself visited the Hospital in disguise to see if the reports of Hospitaller charity were true. He came away satisfied that they were, and when he took Jerusalem in 1189 he allowed the Hospital of St. John to stay there undisturbed for more than a year until the sick and wounded were all cured, and the Hospital with its equipment and *personnel* could be conveniently moved. Ambulance work is admirably calculated to draw all races and religions together. The Order of St. John of Jerusalem carries out its charitable and philanthropic work without regard to race or religion. In its eyes men are human beings, not the votaries of any particular creed. Nothing, perhaps, is a stronger argument in favour of Ambulance Organisation in India than the fact that at this moment a number of classes of instruction are being formed or conducted, the one quite independently of the other, in far-separated parts of India, to wit:—

- (1) By the Branches of the National Indian Association in Bombay and Ahmedabad.
- (2) By the Y. M. C. A. and Y. W. C. A. in Calcutta and Madras.
- (3) By a Lady-doctor at Allahabad.
- (4) At Simla.

These classes are all being carried out on the St. John Ambulance system. Colonel Hendley, Inspector-General of Civil Hospitals in Bengal, is having a simplified form of the St. John Ambulance Association course taught to the Police and on the Railways of Bengal. I have mentioned here just the few cases that have come to my knowledge. Doubtless, there are many more.

A. C. YATE, *Major,*

*Knight of Grace, O.S.F.F., Member of the Central
Executive Committee, S.F.A.A., and Honorary
Organising Commissioner for India.*



SOME FOREIGN ARTICLES OF SPECIAL INTEREST.

NAPOLEON'S STRATEGICAL POSITION AT THE CLOSE
OF THE TRUCE OF POISCHWITZ, 1813.*(Militär. Wechenblatt.)*

A lecture delivered before the Berlin Military Society on the 14th November, 1900, by Major and Battalion Commander Friedrich, 2nd Baden Grenadier Regiment, Emperor William I., No. 110.

TRANSLATED BY CAPTAIN A. A. E. CAMPBELL, 25TH P. I.

[*Introductory.*—To make the following examination of Napoleon's strategical position during the summer of 1813 clear, it may be as well to briefly recount the events that led to the truce of Poischwitz (or Pleswitz, as it is also written.)]

Before the war with Russia, all Europe was at Napoleon's feet with the exception of England, the maritime power. He had given Kings to Spain, Holland, and Italy. He had humbled Austria and Prussia. The Emperor of Austria was his father-in-law, the King of Prussia his subservient ally. Saxony, Bavaria, the Hanse-towns were subject to his supreme influence. Denmark, after the destruction of its fleet by England, was no longer a power. Norway and Sweden were doubtful, but a Marshal of France had been elected Crown Prince of Sweden. Even Prussia was an ally of the French Emperor. But though Governments and Kings were forced to accept alliances with France, the whole of Europe was seething with the indignation and resentment natural to high-spirited peoples, who have been humiliated.

The retreat of the French army from Russia under circumstances closely resembling a rout, was the signal for a general upheaval. The Russian troops followed close on the heels of the retreating Frenchmen, as far as the borders of Poland and Silesia. Napoleon in December, 1812, had reached Paris, where his presence was urgently required to reassure his friends, to take measures to revive the now failing confidence of even Frenchmen, and to devise schemes for the reconstruction of his shattered army. Meanwhile the feeling of revolt in Germany, and especially Prussia, got beyond bounds, and it was not long before the Prussian King found himself forced by the national feeling to break his agreements with Napoleon and to

join the Russians and Swedes arrayed against him. Prince Eugène Beauharnais, who commanded in Napoleon's absence, was forced successively to evacuate Posen and Berlin, and March, 1813, found the French on the line of the Elbe. The national feeling in Austria was strongly in favour of the coalition against Napoleon, but the old Emperor and his counsellors resisted the popular excitement, with the hope of regaining the lost position of Austria by mediation.

By April, 1813, Napoleon was prepared to take the field again with an army of some 200,000 men. On the line of the Saale he effected a junction with Prince Eugène and on the 2nd May defeated the allied Russians and Prussians at Lutzen near Leipzig. Three days later he was at Dresden, where he halted for a week, while his troops moved on. At the instance of Austria an armistice, as a preliminary to peace, had been proposed, and the formal proposals reached the Czar and the King of Prussia on the 21st May near Bautzen on the Spree, where their armies had already been engaged the whole of the day before in defending the passage of the river. They decided to postpone a reply until after the fate of the next day's fighting should be decided. The Allies were again defeated and fell back to Breslau. Napoleon who was sincerely anxious for peace, but on his own terms, and was ready to agree willingly to an armistice in order to gain time, should peace negotiations fall through, only waited to hear that Davout had retaken Hamburg and thus secured the Hanseatic cities to France, and then signed the armistice.—[*Translator.*]

In August, 1813, Napoleon held the following fortresses : on the Vistula, Dantzic, Modlin and Zamosey ; on the Oder, Stettin, Cüstrin, and Glogau ; on the Elbe, Torgau, Wittenberg, and Magdeburg. The main body of his forces stood forward of the Elbe in Saxony and Silesia with the camp of Dresden as central point and main bridgehead. On the far right flank of his position were a Bavarian corps of observation on the Inn and the army of Prince Eugène Beauharnais on the Isouzo. On the extreme left stood Davout's corps at Hamburg.

The Emperor was aware that the Allies stood opposed to him in three groups : a Prusso-Russo-Swedish Army, according to reports received under the command of the Crown-Prince of Sweden, in the Mark of Brandenburg, the main Russo-Prussian Army in Silesia, the Austrians in Bohemia. If Napoleon up to the time of expiration of the truce had any hopes of being yet able to attract Austria to his side, he certainly did not count upon these hopes in laying his plans of operation, but reckoned Austria as hostile.

Compared with the scattered disposition of his foes the Emperor regarded his own concentrated position as uncommonly favourable. Although he was inside a wide semi-circle of his enemies, he expected to be able to turn this very fact to his own advantage. He assumed that the allied generals would endeavour to direct their so

widely separated armies by a consorted and uniform idea, but he nevertheless expected by operating on the inner lines to be able to step in with superior force at all decisive points; he trusted in his lucky star and his genius and reckoned upon his enemies making blunders. "Ils écraseront des défauts, nous tomberons sur eux, nous les écraserons."

Napoleon's position at this crisis has in military literature often been compared with that of Frederick the Great in the Seven Years War, and certainly they offer many points of similitude. Like the great King, Napoleon was opposed by a coalition of almost all Europe: like him he was the most famous leader of his time, far superior to his opponents in the art of leading masses of troops; like him he was surrounded by the enemy and held the advantage of operating on interior lines; the very enemy and theatre of war were, speaking generally, the same. It has been asked, why Napoleon did not take Frederick the Great as a model in the operations that followed. But if we look over the course of the Seven Years War, we observe that the great King operated in quite a different fashion at different phases of that heroic struggle. In the early part of the war, whilst he still had a strong and well-trained army at his disposal, he acted strategically and tactically on the offensive; sought out his enemy, beat him before he could get support from his ally, then turned in forced marches on the advancing ally before he could effect his junction with the remnants of the force just defeated, and so on. It was otherwise during the last years of the war, from 1759 on, after his veterans had all fallen on the battlefields of Bohemia and Silesia, many of his most experienced generals were dead or prisoners; his treasury was exhausted, and every man and every thaler had become precious, almost impossible to replace. His resources no longer sufficed for offensive operations; he was obliged to confine himself to depending on the support of fortresses and fortified positions and to let the enemy advance, to watch his movements with the eyes of a lynx so as to profit by the slightest weakness, surprise him and inflict a check. He was therefore during this period strategically on the defensive, tactically on the offensive. How could Napoleon have put himself in the same position? How was he to adopt the strategy and tactics of Frederick the Great either before or after 1759 as a model? And if he decided on taking the offensive, upon which of the three groups of hostile armies ought he to have directed the first stroke? The total forces of Napoleon were numerically superior by far to any one of the three armies of the allies. It was a fundamental rule of the Emperor's—a principle he constantly carried into practice—to win by numerical preponderance at the critical point at the critical moment. In accordance with this principle it was certain that he would direct his whole force against one of the three allied armies. It lay with him whether he should do this in the direction of either Vienna, or Berlin, or Breslau; his concentrated position in the middle of the allies gave him this triple choice. After he had decided upon which should be the object of his operations, it was open to him at the close of the

truce to concentrate his army on the border of either Bohemia or Silesia, or the Mark. It was therefore before all things necessary to be absolutely clear as to the advantages and disadvantages of each of the three courses open to him. Let us endeavour to reconstruct the probable course of Napoleon's reasoning.

An advance upon Bohemia against the Austrian army seemed rich in possibilities. If Napoleon held on to the fortresses on the Vistula, Oder and Elbe, concentrated the mass of his forces during the truce on the Austrian frontier and threw them at its close by forced marches into Bohemia, he would at a blow break through the circle enclosing him without relinquishing his grasp on North Germany. No doubt the Russo-Prussian army would at once cross from Silesia by the Lausitz or Iser Gebirge into Austria, but in all probability it would arrive too late to be of assistance at the critical moment. Every step of such a march towards their left would carry them further from their natural base, Poland, whilst Napoleon on the contrary would have drawn nearer his, the states of the Rhenish confederation and France; for it was actually easier for him to bring reinforcements of troops, material and supplies through South Germany to Bohemia than through Middle Germany to Saxony. If his first undertakings in Bohemia were attended with success, he would be in a position to facilitate the advance of Augereau and Wrede into the valley of the Danube and could stretch out a hand to his army in Italy. His line of retreat would be fully covered by the well fortified line of the Elbe, but the Austrian army would hardly be able to offer any very serious resistance. It was the weakest of the three armies opposed to him, and as regards its internal condition of the least account. It was therefore most likely to suffer a crushing defeat; while such a disaster at the very opening of the campaign would probably persuade the already vacillating politicians of the Imperial Austrian Government to detach their empire from the coalition, to conclude peace, and even to renew the alliance of the preceding year.

The advantages offered by an offensive against Bohemia appeared so convincing, that at the allied headquarters the plan was counted upon as the most probable one for Napoleon to adopt. Whether the Emperor seriously took such a plan into consideration during the truce, it is impossible now to say with certainty, but his correspondence contains no grounds whatever for the supposition. If he did, he would not have failed to entertain great doubts as to the advisability of the course. In the first place it would have been a very risky thing to leave the fortresses on the Vistula and the Oder to themselves for an indefinite time; most of them were incapable of holding out long against a siege. In the Elbe fortresses and in Saxony there were the whole of the depôts and magazines of the Grand Army, immense stores of provisions and matériel; to get them into security and on to the new base of operations in the short time available was impossible; without them it would be difficult however to supply the army in Bohemia for any length of time and to keep it fit and ready for the field. Besides this, what guarantee

had the Emperor, if he advanced into Bohemia, of compelling the Austrian army to fight? If they evaded a pitched battle, he would be beating the air at great hazard, or would, if he penetrated far into Bohemia, find himself in a most dangerous position, which might perhaps lead to another Leipzig.

In addition to the purely military grounds for considering an offensive campaign in Bohemia hazardous, there were political reasons. Austria had not yet declared war, the negotiations at Prague had not yet come to an end. Although Napoleon reckoned, in making his plans, on Austria joining the coalition, he had in his heart by no means given up hope of being able to bring her over to his side and of not being forced to deal with her at the sword's point. Owing to the family ties that united him with the Emperor Francis, and to Austria's now vacillating, now grasping policy, the hope was not altogether unjustified that some territorial concession yielded at the tenth hour would suffice to at least keep the Imperial State neutral.

If an advance upon Bohemia had its risks, offensive operations against the second group of the Allies, the main Russo-Prussian Army in Silesia, offered no prospect of success at all. It was absolutely certain of failure, if the Allies drew off eastwards, while their two other armies moved forward upon the French line of retreat. It is hardly necessary to set forth the danger of the situation for the French, if Napoleon pressed with the mass of his forces on to the Vistula, while the Crown-Prince of Sweden and the Austrians forced their way in between the line of the Elbe and the Emperor's chief point of support at Dresden.

Consequently the only course left was to move in the direction of Berlin against the forces united under the Crown-Prince of Sweden. In favour of this course of action there were a number of well-founded arguments. The Crown-Prince could be easily reached with superior forces, before help from Silesia could get to him; his—in Napoleon's opinion—military deficiencies and the peculiar constitution of his army seemed to make him an easy prey, while his defeat was certain, judging by Bernadotte's character, to result in the complete evacuation of the Mark. Prussia was the centre of gravity of the whole war. This state was fighting for existence; if defeated, it would lose its independence as a power. A blow at the heart of Prussia would have incalculable moral effect. If the French won a great victory over the Crown-Prince, the Northern Army would disappear from the theatre of war; the Crown-Prince would not hesitate to retreat with his Swedes to Stralsund and Rügen; the Prussians and Russians under his command would be forced to retire behind the Oder and the Vistula, and weak and dispersed, as they would be, would no longer need to be considered as a hostile army. The sphere of Napoleon's power would then once more spread over the whole north-east of Germany, the fortresses of Cüstrin and Stettin could be relieved, and the 10th Corps (Rapp's) shut up in Dantzic would be set free. Distant provinces of the

monarchy with their rich resources would then cease to afford recruits and supplies for Prussia's army, and the population of the Hans cities, Westphalia and Hanover, who were inclined to revolt, would be withdrawn from hurtful influences. If we add to all these arguments Napoleon's personal hatred of Bernadotte and of Prussia, and his desire to take revenge on them for their defection from his interest, it is intelligible to find this plan for an offensive in the direction of Berlin predominant in all Napoleon's thoughts and plans throughout the autumn campaign.

All this seemed to be very obvious ; there were however some grave drawbacks. Before all things it was necessary that Napoleon should see his way clear to move on to the attack of the Northern Army after taking Berlin, without a halt. The capture of the Prussian capital would only be a moral, not a material victory. Berlin had neither strategical nor political significance ; with its arsenal and magazines emptied and its treasure removed, with the Royal Family and central Government of the State accompanying the army, it was no more worth consideration than any other large provincial city. It was imperative, if operations in this direction were to produce positive advantages, to press forward, as has already been pointed out, to the Oder and the Vistula ; but it was improbable that in this case the allies would remain inactive in Silesia and Bohemia. They would certainly hurry forward on all sides against Dresden and Leipzig, would destroy his magazines, as far as they could reach them, and break the communications of the Grand Army with the Rhine and France. If Napoleon returned from Berlin to the Elbe, he would undoubtedly find the Russo-Prussian Army from Silesia united with the Austrians on the plains of Leipzig ; if he left the Allies unmolested in Saxony, disregarded them, and pursued his way to the Oder and the Vistula, the fate of South Germany and the Rhenish Confederation would be left completely at the mercy of his foes, and in the prevailing state of mind of the German people everywhere at the time the defection of these States would then become a matter of certainty.

So we see that if Napoleon adopted a plan of operations both strategically and tactically offensive, he ran considerable risks. We see that the Emperor by force of circumstances was forced in spite of himself into the course of action into which Frederick the Great had been compelled after 1759 from pure weakness,—the strategical defensive. For this the conditions seemed fairly favourable. The line of Elbe with its numerous fortresses and crossing-places, which would with ease be strengthened or increased, appeared to offer an excellent base of operations. Of course the geographical position of Bohemia gave the Austrians an easy opportunity for acting on the left bank of the Elbe, but Napoleon laid little stress on this circumstance, since he regarded the Austrian Army, so long as it was left to itself, as the least to be feared of his opponents.

If the Emperor's line of reasoning, which we have been attempting to follow, lead him to decide on opening the campaign in a

defensive attitude, he was very far indeed from dreaming of keeping up a purely passive defence. No leader in history was so convinced of the superiority which the offensive ensures, none was ever so driven by his whole personality to take the offensive, as Napoleon. The successes of his previous campaigns had been chiefly due to his constant capacity for wresting the initiative from the very commencement of the struggle from his adversary and for forcing his will upon him. A purely defensive conduct of the war would have also cost much time, while time was precious, for Saxony was hardly in a position to supply his army with provisions. Every week of time lost was so much gain to his enemies, while he himself had no more reinforcement worth mentioning to expect. He conceived therefore that, with the Elbe as a base, by a rapid offensive, energetically carried out with superior forces, he might repel his foes, if, as in all probability they would, they advanced concentrically against him; he hoped to beat them in detail, to annihilate them.

But could he not at any rate upon one part of the theatre of war take the offensive against one of the three hostile armies? This depended on the strength of the forces on either side. According to the Emperor's reckoning the Russo-Prussian army in Silesia amounted to 200,000 men, the Austrians in Bohemia to 100,000. If he opposed this 300,000 with a force of equal strength, he had about 120,000 left. These, or at least the greater portion of them, Napoleon determined to use in an offensive operation in the direction in which the most advantages seemed to beckon him. So he modified his first plan and resolved to remain preliminarily on the defensive with his main forces, and with a second army to take the offensive and attack the Northern Army.

Having thus far decided on his plan of campaign, the next question was to so arrange that his base, the line of the Elbe, should assure him the strongest possible support and at the same time allow him all possible freedom of movement.

The defences of the middle Elbe were the fortresses of the Magdeburg, Wittenburg and Torgau. Magdeburg was one of the strongest fortresses in Europe; its works were in good condition, and all that was needed was to complete its armament and to form a garrison. This garrison Napoleon purposed to make very strong; they were not only to serve as a garrison, but also as the connecting link between the two great masses of the army upon the upper and the lower Elbe. Almost equidistant from both Hamburg and Dresden, Magdeburg seemed the most appropriate place to which to send the whole of his sick and wounded, and he also proposed to transfer thither the great cavalry dépôt from Hanover. He appointed his Aide-de-Camp Lemaître, Governor, with instructions to "turn the whole of Magdeburg into stables and hospitals."

There was more to be done at Torgau and Wittenburg. He had the works strengthened and provisionally completed, and enormous stores of war material and provisions brought in. When this much had been done in these three fortresses, Napoleon felt all secure on the middle Elbe.

It was not such easy going on the upper and lower Elbe. Two points in particular had to be taken into consideration. Hamburg and Dresden, two cities of almost equal importance to Napoleon. He did not regard Hamburg merely as a commercial town, invaluable for the sake of its capacity of supply for the army; he regarded it also as the point, by possession of which he crippled the communications of the Allies with England, held Denmark to the French alliance, and kept a check upon the inclination of the people of Holland Hanover and Westphalia to rise against him. To secure this point, he had sent there immediately after his capture of the city in May, 1813, his most energetic and enterprising lieutenant, Marshal Davout. On the 7th June he issued to the Marshal the most stringent directions for the fortification of the place, with the object not only of securing the city against surprise, but of making it strong enough with a garrison of 6,000 to offer two months' resistance to a formal siege by an army of 50,000 men. At the close of the truce, the majority of these fortified works were completed, and Davout had with the regardless energy peculiar to him turned Hamburg into a *place d'armes*—half fortress, half fortified camp—which he was only forced to evacuate on the 25th May, 1814, at the bidding of the government of Louis XVIII.

The lower Elbe was rendered secure by Hamburg; the upper Elbe covered by Dresden.

The new town of Dresden on the right bank of the river had in 1811 been divested of its outer line of defences in the form in which they had existed since the Seven Years War, in order to make room for new houses and buildings. Parts of it were however still standing and the direction and extent of the former six bastions with their intermediate curtains were distinctly traceable. On the 28th June Napoleon gave General Rogniat, the chief of the general staff, detailed directions for new fortifications with the idea of forming in and around Dresden a fortified camp for 50,000 or 60,000 men. In accordance with these orders and under the Emperor's personal supervision the work was done. The whole extent of the earlier counter-scarp was provided with palisades and palisaded tambours erected in front of the gates, to cover ingress and egress. Wherever there were walls, banks and earthworks standing, these were taken into the line of the defences. North of the Bautzen Gate was erected a large detached fort of a permanent outline, the *Fort Impérial* which flanked on each side the two lines of front of the new town and was provided with a walled keep. On the heights, where the new barracks are now, eight large field-works were erected with huts for their garrisons. All these works were provided with the requisite guns, and no effort was spared to render a prolonged defence possible. Thus towards the end of the truce the new town was in a condition with

even a small garrison to withstand the attack of a considerably superior force for some time.

In July, when Napoleon was convinced that Austria would join the coalition, he began to fortify the old town on the other bank of the river as well. Here it sufficed, in the Emperor's opinion, to render it secure against a *coup de main*. A walled enclosure, using the walls already standing, connected by palisades, the outlets covered by field-works, the gorges of which were closed by palisaded tam-bours, the establishment of good communications which allowed of artillery moving at a trot round the whole circumference. These measures were considered sufficient for this apparently little threatened front. All this work, carried out with energy, was completed towards the end of the truce, so that Dresden had by then been transformed into a regular *place d'armes*, capable of opposing a prolonged resistance to a superior force with the support of the field army.

Thus the Emperor's base of operations was made as secure with fortifications as time and circumstances permitted. In order to gain freedom for his movements he increased the number of crossing-places over the Elbe, especially downstream. Close to the stone bridges at Dresden two more bridges were formed of boats, under the guns of the Königstein two fords were arranged for, and at the foot of the Lilienstein opposite bridge head defences were raised. The path leading from Dresden by a goat track to Stolpen, which strikes off from that village to the main road from Dresden to Silesia, was improved and widened for marching columns of troops. At a first glance this looks unimportant, but is really a fresh example of the Emperor's extraordinary foresight and was of the highest strategical importance, as now Napoleon was able to gain the road to Teplitz direct from Silesia and fall on the rear of an army advancing by the main road on Dresden.

Hand in hand with the arrangements just described went vast preparations for the food-supply of the army. Daru, the *directeur de l'administration de la Grande Armée*, received detailed orders on the 17th June on this count. Twenty thousand hundredweight of flour were to be brought from Erfurt to Dresden, 500 cwt. every day, so that the transport should be completed in 40 days. 40,000 cwt. of flour were to be transported by river and road from Magdeburg, the land transport on the left bank of the Elbe. In the markets of Saxony and Bohemia were to be purchased 20,000 cwt; in Bamberg and Bay-reuth 10,000 cwt. Thus the Emperor expected to have by the 20th July 80,000 to 100,000 cwt. of flour in Dresden. A million rations of biscuit were brought from Erfurt; in Dresden itself 10,000 were baked every day, so that in 40 days, that is, by the expiration of the truce, 400,000 more rations would be ready. From the neighbourhood of Dresden 30 000 bread rations were produced daily, of which only 18,000 or 200 cwt. a day were allowed to be consumed. All train battalions (*bataillons d'équipages militaires*) coming from Mainz or Wesel had to have their wagons loaded with flour or rice.

Ten days before hostilities reopened flour was to be furnished to Bautzen, Görlitz and Bunzlau. For this purpose all army wagons were to be sent to Dresden to be loaded up with flour and to return back to the troops. At the close of the truce every corps was to have biscuit for ten days, *pain biscuité* for six days, and bread baked for four days, that is, to be provided with rations for 20 days.

Twenty thousand hundredweight of flour were purchased and added to the 10,000 already in Glogau. This gave three million rations, of which two millions were to be consumed by the field army, and one million were for the garrison. The flour transferred from Magdeburg was replaced by 50,000 cwt. of wheat, which was collected in Hamburg, and by as much more collected in the district of the 32nd Military Division. Brandy, wine and rum were also furnished from Hamburg.

At Erfurt 500,000 biscuit rations and 10,000 cwt. of flour were to be always in readiness, to immediately complete what was despatched to the other parts of the theatre of operations. The wheat required for this purpose was to be obtained from the western districts of Germany.

Six thousand head of cattle were to be requisitioned in the district of the 32nd Military Division, and Saxony was to supply Dresden with 36,000 meat rations a day. Besides this daily requirement a reserve of three million meat rations—4,000 to 5,000 oxen—was to be formed. The garrisons of Magdeburg and Erfurt had to send their stock of cattle to Dresden and to replace it in the open market.

Upon rice the Emperor laid the highest value, less as a provision than as a preventive to the spread of dysentery. Every soldier received an ounce of rice per diem, which up to the 20th September made 20,000 cwt. required. Since there were in the various fortresses stores of only 5,500 cwt., 14,500 cwt. had to be purchased. This was chiefly effected in Hamburg, but all the stock in Bremen and Leipzig was laid under contribution.

At the commencement of the operations the Emperor reckoned upon being able to feed the army off the country itself; the stores collected were to serve as a reserve and supplement. The soldier was to carry a four-day ration on his person, but the Emperor intended to diminish the bread ration and to increase the rice ration, so that it should be possible to carry rations for twelve days. The flour wagons were to follow the troops, and to refill by collection, as they were emptied. By the application of this mixed system of commissariat the Emperor was confident in being able to keep his troops supplied, even after the country stock had been exhausted.

Even the medical arrangements did not escape the Emperor's notice. By the 26th May he had ordered the formation of a battalion *d'équipages militaires d'ambulance* of twelve companies, each company with fifty ambulance wagons. On the 3rd July he directed the establishment of military hospitals at Dresden, Magdeburg, Wittenberg, Torgau, Erfurt, Leipzig and Glogau. Together, these could take in 24,000 sick and 11,000 convalescents,—unfortunately not half sufficient for the requirements.

After all these measures to secure the base of his undertakings had been set on foot, the Emperor turned his glance further afield. His topographers collected all the maps and plans of the future theatre of war, upon which they could lay their hands. Numerous staff officers reported on the roads and paths of Saxony and Silesia, the Elbe and the conditions on the Bohemian frontier. His geographical engineers prepared from these reports a large scale map. He studied every report received with the utmost care and verified the impressions gained by journeys in all directions. His wonderful eye for ground and his lively imagination stood him in good stead. At the expiration of the truce he was as much at home in Saxony and Silesia, as if it had been his own country.

Now, when the end of the truce is close at hand, the Emperor makes his final resolutions. These we find clearly expressed in two despatches that supplement one another. One is dated the 12th August and is directed to Marshals Ney and Marmont, the other was written 24 hours later and is addressed to Marshals Ney, Macdonald, Gouvion, St. Cyr and Marmont. The first runs thus :—

“ The following is the plan of campaign, which I shall probably adopt and as to which I shall finally decide by midnight.

“ My whole army will be concentrated between Görlitz and Bautzen and in the camps at Königstein and Bautzen. If works have been raised at Liegnitz and Bautzen, they are to be destroyed.

“ The Duke of Reggio (Oudinot) with the 12th, 4th and 6th Corps advances on Berlin, while Girard moves forward with 10,000 men from Magdeburg and the Prince of Eckmühl (Davout) with 40,000 from Hamburg. Besides these 110,000 men, who are to march on Berlin and thence on Stettin, I have in hand at Görlitz the 2nd, 3rd, 5th, 11th and 1st Army Corps, the 1st, 2nd, 4th and 5th Cavalry Corps and the guard. That makes nearly 300,000 men. With these I shall take up a position between Görlitz and Bautzen, so that I cannot be cut off from the Elbe, shall remain master of the line of the river, supply myself from Dresden, see what the Russians and Austrians are doing and take advantage of circumstances.

“ I should prefer to take up a position at Liegnitz, but Liegnitz is 48 leagues, that is eight marches, from Dresden all along the Bohemian frontier. From Bunzlau it is 36 leagues and from Görlitz 24 from Dresden; if I take up my position between Görlitz and Bautzen, I shall be only 18 leagues from Dresden. The country (in case of a position at Liegnitz) would be overfilled with troops and we should certainly be very crowded; we should have difficulty in living there a month. Meanwhile my left flank would reach Berlin and drive all before it, and we should defeat the Austrians and Russians, if they offered battle. If we lost the battle, we should be driven closer to the Elbe and be in a better position than before for profiting by any blunders the enemy may commit.

"I do not see how any one can hesitate about the good points of Liegnitz.

"It is not quite the same with Bunzlau, though it has not escaped me that this position offers the advantage of enabling us to prevent the enemy getting between me and the Oder, whilst, if I lie between Bautzen and Görlitz, he can march by Bunzlau straight upon Görlitz.

"The Austrian head-quarters are at Hirschberg. It appears that they intend to advance by Zittau.

"Give me your opinions upon all this. I assume that the issue must be a pitched battle, and think that it would be more to my advantage to fight it at Bautzen, two or three marches from Dresden, than at a distance of five or six. From the Bautzen position my communications are less exposed and I can more easily obtain supplies, especially as meanwhile my left flank has taken Berlin and the whole lower Elbe is open. That undertaking runs no risk, because in any case my troops have Magdeburg and Wittenberg to fall back upon. I am a little loath to give up Liegnitz, but it would be difficult to concentrate the whole of my troops there. I should have to divide them into two armies, and the situation might be disadvantageous, if I were extended over a line of 30 leagues along the Bohemian border, from which the enemy can break out anywhere he chooses. It appears to me that this campaign can bring us no good results, unless a great battle is fought. I need hardly tell you, that if we should be spread out upon this line, we must nevertheless constantly threaten the resumption of offensive tactics, since the enemy will only be one or two leagues from us across the neutral line.

"Since Austria has sent one army against Bavaria and another against Italy, I do not believe that she can bring more than 100,000 men against me. Still less do I believe that the Prussians and Russians together can have 200,000 men, considering what they have at Berlin and in this direction (Silesia). It always seems to me that to win a great and brilliant victory the better course is to take up a close solid position and to let the enemy attack."

Briefly recapitulated, the Emperor's views, according to this despatch, were—

- (1) the concentration of the 1st, 2nd, 3rd, 5th, 7th, 11th and 14th Corps, the 1st, 2nd, 4th and 5th Cavalry Corps and the Guard, 300,000 men between Görlitz and Bautzen ;
- (2) the concentric advance of the 12th, 4th and 6th Corps, the 3rd Cavalry Corps, as well as of Davout's and Girard's troops upon Berlin, 110,000 men.

The following are extracts from the second despatch, dated the evening of the 13th August:—

"The decision I have taken is as follows. Should you have any remarks to make upon it. I beg you to let me have them freely.

"The Duke of Reggio with the 6th, 4th and 12th Corps and the 3rd Cavalry Corps will march on Berlin and the Prince of Eckmühl with

25,000 French and 15,000 Danes will move out from Hamburg. The latter is at present 12 miles in front of Hamburg, which has been made a place of considerable strength. I have ordered the Duke of Reggio to start for Berlin, whilst the Prince of Eckmühl drives all before him, if his enemy is inferior, or at any rate presses him hard, as soon as he begins to retreat. I have accordingly 120,000 men marching on Berlin by various routes.

"On the other side of the theatre of war Dresden is fortified and prepared, including the suburbs, to hold out for eight days. I have it covered by the 14th Corps under command of Marshal St. Cyr. He has his headquarters at Pöna, and holds the Königstein bridges, which are impregnable under the shelter of the fort. By these bridges Bautzen is put within easy access. I move my own headquarters to Görlitz and get there on the 16th. There I concentrate the five Infantry Divisions, the three Cavalry Corps and the artillery of the Guard, as well as the 2nd Corps. They are placed between Görlitz and Zittau and in front of the 2nd Corps towards Bohemia the 8th Corps forms an advance guard.

"The Duke of Ragusa (Marmont) stands at Bunzlau, the Duke of Tarentum (Macdonald) at Löwenberg, General Lauriston at Goldberg, the Prince of Moscow (Ney) in a position between Haynau and Liegnitz; and with him the 2nd Cavalry Corps.

"The Austrian army can, if it advances to attack, do this only in the three following directions:—

First, by advancing on Dresden by Peterswalde with the main body, which I estimate at 110,000 men. It would there encounter the strong positions, which St. Cyr has garrisoned. Forced by such superior numbers, the Marshal will have to withdraw into the fortified camp at Dresden. In a day and a half the 1st Corps can reach Dresden and then there would be 60,000 men in the camp there. On the news of this withdrawal I can myself arrive from Görlitz with the Guard and the 2nd Corps. For the rest, Dresden is, as I have said, capable of holding out for eight days, even if left to itself and without support from Marshal St. Cyr.

"The second approach by which the Austrians can direct an attack is by Zittau. There they meet Prince Poniatowski (8th Corps), the Guard, which assembles at Görlitz, and the 2nd Corps. Before they even engage, I have 150,000 men together to meet them. Whilst the Austrians carry out this manœuvre, the Russians might move on Liegnitz and Löwenberg; the 7th, 3rd, 11th and 5th Corps and the 2nd Cavalry Corps then assemble at Bunzlau and form an army of more than 130,000 men. Besides which I shall in a day and a half send them from Görlitz as many troops as do not seem necessary to oppose the Austrians.

The third course open to the Austrians would be to march off by Josefstadt in order to unite with the Russian Army and so to join them in taking the offensive. I should then assemble the whole army at Bunzlau."

If we summarize the contents of this despatch, we see that the proposals of the preceding day have been considerably modified. The Emperor now orders—

- (1) The 14th Corps, St. Cyr, to remain at Pirna and Königstein, covering Dresden.
- (2) The 1st Corps, Vandamme, and 5th Cavalry Corps, to Bautzen.
- (3) The Guard and 2nd Corps, Victor, between Görlitz and Zittau; in front of the 2nd Corps fronting towards Bohemia the 8th Corps, Poniatowski as Advance Guard.
- (4) On the line of the Katzback, Haynan-Goldberg, the 3rd Corps (Ney) and 5th Corps (Lauriston) and the 2nd Cavalry Corps.
- (5) Behind in second line, on the line of the Bober, Bunzlau-Löwenberg, the 7th (Marmont) and 11th Corps (Macdonald).
- (6) For the operations against Berlin the foregoing day's arrangements hold good.

A comparison of the contents of the two despatches shows that the fundamental plan remains unaltered, *viz.*, an offensive with 110,000 or 120,000 men upon the Crown Prince of Sweden, the rest of the army—300,000 men—standing prepared in Saxony and Silesia and waiting to see how the Allies moved. As regards the grouping of the forces, however, we observe with astonishment that the misgivings expressed in the despatch of the 12th August with reference to advancing as far as Liegnitz are completely put aside, the army is, in point of fact, to be broken up and posted in echelons from the Elbe to the Oder. The grounds for this change of view are not given, but it is clear that the fear lest the army of the Allies in Silesia might march off to their right through Lusatia and the Mark for the protection of Berlin and fall on Oudinot's rear as he advanced upon that city, determined the Emperor's final resolutions.

The attached table enables us to examine more clearly into the strength of the individual groups of the army.

Corps	Battalions.	Squadrons.	Guns.	Sapper Companies.	Total.
3rd, Ney	62	11	124	4	40,006 men.
5th, Lauriston	37	7	84	3	27,905 „
7th, Marmont	42	8	90	4	27,754 „
11th, Macdonald	38	7	92	3	24,418 „
2nd Cavalry, Sebastiani ... ..	.....	52	18	.....	10,304 „
Total	179	85	408	14	130,387 men.

I.—FRONTING EAST ON THE KATZBACK AND BOBER.

II.—FRONTING SOUTH.

(a) *At Zittau.*

8th, Poniatowski	10	6	52	1	7,573 men.
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(b) *Around Görlitz.*

Guard	62	59	218	7	58,191 men.
2nd, Victor	43	6	76	3	25,158 „
1st Cavalry, Latour Maubourg	78	36	16,537 „
Total ...	...	105	143	330	10	99,886 men.

(c) *At Bantzen.*

1st, Vandamme ...	...	42	4	76	2	33,298 men.
4th, Cavalry, Kellerman	...	.....	24	12	.....	3,923 „
Total ...	...	42	28	88	2	37,221 men.

(d) *Around Dresden.*

14th, St. Cyr ...	...	51	12	92	5	26,149 men.
5th Cavalry, L'Héritier	...	.....	22	6	.....	3,000 „
Garrison of Dresden	...	6	8	100	.....	5,000 „
Garrison of Lillienstein	...	1	.....	.....	.....	700 „
Total ...	...	58	42	198	5	34,849 men.

The grouping is masterly. It allows of the Emperor applying superior or at any rate equal force in the shortest possible time at any point attacked by the Allies. The following are the combinations contemplated by Napoleon to close the various possible lines of attack:—

1. In case of the Russo-Prussian Army in Silesia, taking the offensive in the direction of Dresden, it is met on the Bober by four Army Corps amounting to 130,000 men, which can be quickly

reinforced to a strength of 238,000 men by the Guard, the 2nd and the 7th Corps.

2. If the Austrian Army advances against Dresden by Peterswalde, it is met at Pirna by the 14th Corps, which can be reinforced in a day and a half by Vandamme's 1st Corps. The two corps, including Kellerman's and L'Héritier's Cavalry Corps and the Dresden Garrison, are 70,000 strong, and easily capable of keeping the Austrians, estimated at 100,000, in check, until the arrival of the Emperor with reinforcements.

3. Should the Austrians move by the Gabel-Zittau road, they encounter Poniatowski's 8th Corps at Zittau, and the 2nd Corps and the Guard can very quickly be pushed up in support. There will then be 107,000 Frenchmen opposed to the Austrians as they debouch from the mountains.

4. If the Russo-Prussian Army advances from Silesia, while at the same time the Austrians move forward in any given direction, one of them will be held in check by the corps nearest to their line of approach, until the Emperor has beaten the other and is in a position to bring up his reserves.

5. If the Austrian Army crosses over into Silesia by Josefstadt to join the Russo-Prussian Army, the Emperor also concentrates the whole of his forces at Bunzlau and fights the decisive battle out.

It is clear that Napoleon's directions all fully conform to the purpose he had expressed of meeting any and all of these alternatives in a posture of defence, and it is self-evident that he still had a perfectly free hand at a given opportunity to have recourse to the offensive. If the Allies blundered in their operations and gave him the chance of falling upon one of their armies detached and out of possibility of support, it may be assumed, as a certainty, that he would not let such an opportunity pass.

The Emperor therefore believed himself safe at every point and prepared for every conceivable measure the enemy could take. The thought of course never occurred to him that the Russo-Prussian Army could betake itself to Bohemia and effect a junction there with the Austrian, or that the Monarchs of Russia and Prussia would agree to put considerable detachments of their armies under the command of an Austrian General. When, on the 16th August, the rumour reached him of 60,000 Russians marching to Bohemia, his plans were not in the least upset; his main object still was to dominate the line of the Elbe when he was informed that the plan adopted by the Allies was to advance upon South Germany from Bohemia by way of Bayreuth; he wrote on the 17th August to Gouvion St. Cyr as follows:—

"Should the enemy, as he has given out, advance *en masse* by Bayreuth into South Germany, I shall wish him a pleasant journey and allow the move in firm conviction that he will go back faster than he has come. All that matters to me is that he should not

cut us off from the Elbe and Dresden, and it matters very little indeed if he separates us from France." And at the close of the same letter he continues: "The fact is, it is an impossibility to surround 400,000 men supported by a line of strong places on a river like the Elbe and able to break out with equal freedom at either Dresden, Torgau, Wittenberg, or Magdeburg. All the hostile forces, that have had to be frittered away in strategical manoeuvres, would not meet again in time for battle on the critical day."

Let us now turn to the second part of Napoleon's plan of operations, the offensive move against the Northern Army of the Allies:—

On the 12th August the Emperor had sent Marshal Oudinot the most detailed directions, which were on the 13th supplemented and completed by a despatch from Berthier. The following are brief extracts from the latter:—

"In accordance with the Emperor's plans I have instructed General Bertrand with the 4th Corps at Sprottau, General Reynier with the 6th Corps at Görlitz, and the Duke of Padua with the 3rd Cavalry Corps at Leipzig to join you in the neighbourhood of Luckau. By the 15th or 16th your head-quarters are to be moved to Baruth and your whole corps should be concentrated in one bivouac. In the course of the 17th or at latest of the 18th you must invade the enemy's territory.

The Emperor has assumed that the enemy is not in great strength in front of you. If you meet with resistance, you may wait for the 6th and 4th Corps. His Majesty expects both to join you on the 19th at Baruth. If the enemy has not 60,000 men to oppose you with, it is important that you should press forward, both in order to get information as to his movements and to seize the initiative and make room for the corps following in rear.

General Dombrowski with 3,000 or 4,000 men, including 1,500 horse and 6 guns, is on your left, covering the little Anhalt States. He has orders at the close of the truce to post himself between Wittenberg and your Army Corps, in order to ensure your communications with Wittenberg. If he meets with pressure from superior force, he withdraws towards Wittenberg, but advances again immediately, if your movements necessitate the enemy's retirement.

General Dombrowski is placed under the orders of General Girard. Through the Governor of Magdeburg, General Lemarois, in whose command Girard is, I have sent directions to the latter to support your offensive by an advance on Brandenburg to open up communications with your future head-quarters at Berlin and to ensure, according as circumstances fall out, your connection with Magdeburg, Wittenberg and the Prince of Eckmühl (Davout). General Lanusse commands, under Girard, the Magdeburg Division.

General Girard's Corps of Observation, which consists of Dombrowski's and Lanusse's Divisions, must on no account allow itself to be cut off from the Elbe. The Magdeburg Garrison would

be too weak to do anything without Lanusse's Division, and that of Wittenberg could do nothing, if it were bereft of the protection of Dombrowski's. You may issue orders to Generals Girard and Dombrowski, so long as you do not take them away from their special task of being an intermediate corps between you and the Prince of Eckmühl and of covering the fortresses of Magdeburg and Wittenberg."

After giving an outline of Davout's part in the campaign, into which we shall enter later, Berthier continues:—

"His Majesty assumes that with an army like yours you will quickly drive back the enemy, take Berlin, disarm the inhabitants and scatter the Landwehr and the whole mass of rotten troops. If Berlin should offer resistance, set the city on fire with shells, and with heavy field guns try to batter down the city walls. This was the way in which we very soon forced Vienna and other capitals to surrender. From Berlin you may transfer your line of communications to Magdeburg and Wittenberg.

It is possible that the enemy intends during your march on Berlin to cross the Elbe between Hamburg and Magdeburg. Possibly your move will cause him to desist from the attempt. In either case endeavour to co-operate with the Prince of Eckmühl to relieve Stettin and Cüstrin and drive the Swedes into Pomerania. Probably the Crown Prince of Sweden, who, they say, is in chief command, will take particular care to spare his Swedish troops and will give cause for dissensions.

The Emperor's one object is to cover your enterprise with the Grand Army and to hold the Austrian and Russian forces in check. Hence you will see how essential it is that you should be inside the enemy's territory by the 18th and in front of Berlin by the 21st or 22nd, provided you do not meet with superior forces."

This despatch to Oudinot finds its supplement in a number of other orders issued to the Governor of Magdeburg, to Girard, Dombrowski and Davout. Only those addressed to the last named are of interest here.

On the 24th July the Emperor had written to the Marshal: "I desire that you by your aggressive position should hold in check the Swedish Army and any other force the enemy has in Mecklenburg, and prevent them from turning upon the 60,000 men whom I am sending on Berlin, and that you should be prepared to follow the enemy's movements or attack him, should he be the weaker."

On the 8th August Davout's rôle is more clearly defined: "You see that all the forces of the Crown Prince must not be employed against the Duke of Reggio, when he advances by Luckau. The enemy must be forced to leave a corps of 30,000 men opposite yourself. This will certainly be effected, if they see you ready by the 10th August to take the offensive. If you have an opportunity, press forward energetically; but if the enemy is in superior strength, take up a good

position to cover Hamburg. Follow up the enemy energetically, threaten to cut the Swedes' line of retreat to Pomerania and try to compel them to retreat thither."

At the close of the same despatch the Emperor observes: "Austria has declared against us. However much this may add to the fighting strength of the Allies, I am still in a position to make head against them. You will, however, understand that it demands energy. If you dissipate your corps of 30,000 men, and especially if you fail to fulfil your task of keeping a superior force of the enemy in check, you would greatly endanger the success of the whole operations.

The circumstances are very grave. The rôle allotted to you demands great activity. Above all things, threaten the hostile force in front of you betimes, so that he cannot let you pass unnoticed and turn his whole strength upon the column moving on Berlin. Again I say: "As soon as the truce comes to an end, break out from Hamburg with a dash."

In a despatch of the 12th August the Emperor gives even clearer expression to this idea. He writes: "Do not let yourself be deceived by the enemy, if he is inferior to you in strength, and least of all by an undisciplined mob, who are of no account whatever. You understand that the Duke of Reggio's Army, because it is only three marches from Berlin, will press most on the enemy and will thus probably draw all their forces upon it. Therefore threaten the enemy's flank, and endeavour to effect a junction with the Duke of Reggio in the direction of Berlin. Even if you get some distance from Hamburg, you will still have your communications with Magdeburg safe."

To sum up the contents of the whole of these despatches:—

1. The 4th Corps, Bertrand, the 6th Corps, Reynier, and the Duke of Padua's Cavalry Corps have to join the 12th Corps, Oudinot, at Luckau. Marshal Oudinot has to take the offensive against Berlin on the 17th August, even if the 4th and 6th Corps from Sprottau and Görlitz are not yet in position. These two corps are only to be waited for, if the enemy proves to have more than 60,000 men.

2. General Dombrowski with 3,000 or 4,000 men takes post between the Berlin Army and the fortress of Wittenberg and ensures Oudinot's communications with that place.

3. On the 17th August General Girard with a division from the Garrison of Magdeburg takes post on the right bank of the Elbe and supports Marshal Oudinot by moving in the direction of Brandenburg. His main business is to preserve the communications between Magdeburg and Wittenberg with the Berlin Army on one side and with Davout on the other. Under no circumstances is he to allow himself to be cut off from the Elbe fortresses.

4. Marshal Davout is to endeavour to draw off from the Berlin Army upon himself as many as possible of the enemy. If the enemy opposed to him is the weaker, he is to take the offensive and try to

effect a junction with Oudinot in the direction of Berlin. If, on the contrary, the enemy is the stronger, Davout is to take up a position to cover Hamburg.

Whilst the Emperor's despatches of the 12th August to Marshals Ney and Marmont justify us in looking upon Oudinot's, Girard's and Davout's advance upon Berlin as a general concentric movement, the orders just quoted clearly and undoubtedly show that the co-operation of these three armies is intended in a strategical, not in a tactical, sense, which is all the more clearly evinced when we consider the very different distances between Luckau, Magdeburg and Hamburg, respectively, and Berlin.

The following is a statement of the forces to be employed against the Northern Army :—

1. The Army of Berlin under Marshal Oudinot, Duke of Reggio.

Corps.	Battalions.	Squadrons.	Guns.	Sapper Companies.	Men.
4th, Bertrand ...	36	8	72	3	23,624
6th, Reynier ...	29½	13	68	1	18,400
12th, Oudinot ...	29	14	58	2	19,373
3rd Cavalry, Arrighi ...	...	27	18	...	5,607
Total ...	94½	62	216	6	67,004

2. Girard's Intermediate Corps.

Wittenberg Division under Dombrowski.	4	8	8	...	3,800
Magdeburg Division under Lanusse.	12	5	15	...	10,000
Total ...	16	13	23	...	13,800

3. Army of Marshal Davout, Prince of Eckmühl.

13th Corps, including mobile portion of Hamburg Garrison.	48	18	94	...	37,514
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The grand total of Napoleon's forces to be employed against the enemy's Northern Army therefore amounts to 118,318 men, 93 squadrons and 333 guns.

(To be continued.)

THE REORGANISATION OF THE FRENCH CAVALRY.

TRANSLATED BY CAPTAIN B. SETON, I.M.S.

This article commences by pointing out that for some time past it has been evident that far-reaching changes in the organisation of this arm were contemplated, as a result of the recognition of the unsuitability of the existing system of hybrid brigades and divisions arranged on German models.

"Corps Cavalry will be abolished, and the whole of the arm will be re-arranged in Divisions, thirteen in number. There will be Cuirassier Division, each composed of two Cuirassier and one Dragoon Brigade, and Light Cavalry Divisions consisting of two Chasseur or Hussar Brigades with one of Dragoons.

There will be three of these Cuirassier Divisions and eight of Light Cavalry; and there remain therefore one regiment of Cuirassiers, nine of Dragoons and three of Light Cavalry. These will be formed into two Divisions,—one entirely heavy and comprising six Dragoon regiments, the other mixed and comprising four heavy and three light regiments.

This organisation is perfectly logical. The reconnaissance and outpost duties of corps will be ensured by the Light Divisions each of which comprises a Dragoon Brigade capable of acting on occasion as Light Cavalry or for shock action. Then there is 'fighting cavalry' proper, Divisions which can act against hostile cavalry or against the other arms. In fact, we shall no longer see, as has hitherto invariably been the case at manœuvres, Heavy Cavalry doing the work of Light, and *vice versa*.

Again from the point of view of actual warfare this organisation of Cavalry into Divisions is perfectly sound, for rare indeed will be the occasions when an Army Corps finds itself isolated and in need of its own Cavalry Brigade.

The new divisional organisation has been foreseen for some time as a provisional measure, and Inspector Generals have been appointed to command these units. But it is far better to have the units permanently arranged in peace time, as it is always easy enough to detach one or more Brigades, if necessary, as was always done by Napoleon.

From the point of view of training the new system cannot fail to be of a great gain to the Cavalry. Every one must have remarked at manœuvres how scratch divisions fail, as compared with divisions which are permanent units. The reason is obvious. A Divisional General has much more control over his unit than an Inspector-General can ever have over three Brigades usually independent of each other. All this will now be a thing of the past; with the Division as the unit, there will be perfect 'entente' and cohesion, and training will be uniform."

From "La France Militaire."

NEW REGULATIONS FOR CYCLIST INFANTRY IN FRANCE.

TRANSLATED BY CAPTAIN B. SETON, I.M.S.

The orders regarding the composition, training, equipment and tactical and strategical employment of combatant cyclist companies have recently been published. The spirit of these regulations shows clearly how essentially the whole training is designed for action on the offensive. The strength of the company is 200, comprising four officers, 19 non-commissioned officers and 156 men, including buglers and artificers. The average pace on the march is laid down as about 7 miles an hour, but on occasion and for a short time this can be increased to 12½. At present there are two companies, but two more are to be raised by the 132nd and 147th Regiments of the Line. Besides these companies smaller units of 30 men have been raised by certain Engineer battalions, and these are to be attached to cavalry regiments as Pioneers. These detachments will have one transport waggon and a couple of light carts for tools and explosives.

From the "Allgemeine Militär Zeitung."

FORMATION OF MACHINE GUN DETACHMENTS IN THE GERMAN ARMY.

BY CAPTAIN J. M. HOME, 2-2ND GURKHAS.

The budget of 1901-02 provides for the creation of a Machine Gun Detachment per Army Corps. However, for financial reasons, only five of these units will have been formed by 1st October 1901. These five detachments are to be posted as under :—

One to the Guard Corps, one each to the 1st and 17th Corps and two to the 15th Corps.

The following orders have been issued regarding these new units:—The Machine Gun Detachments (Maschinengewehr Abteilungen) will form an integral portion of the Infantry Arm, and will be attached to a Battalion of Infantry or of Rifles, as mounted rifle squadrons are attached to cavalry regiments.

The personnel will be three officers, nine non-commissioned officers and 58 privates, of whom 18 will be drivers. Of the nine non-commissioned officers, one to be a farrier and another an armourer, thus the total strength of all ranks will be 60.

There are to be 43 horses,—34 draught and nine saddle.

The material is to consist of six guns and two ammunition waggons.

Thus the machine guns are, so to speak, grouped in battery and not attached singly to battalions as is the case in the British Army,

and our experience would seem to show that we are right and the German wrong, as it is hard to see when six machine guns can be used *en masse* and the splitting up of units in action does not recommend itself.

The "Armee Verordnungsblatt" of 11th June gives the uniform the detachments will wear; it practically comes to the same as the Jäger Battalion at present, green and red facings with the jäger head dress, and yellow high boots; officers are authorised to wear the uniforms of their former units except on parade till 1st April 1904.

The gunners will have a carbine, non-commissioned officers and drivers the artillery sabre and provisionally a revolver, until the automatic pistol which is to be proper weapon is served out.

Detail of uniform. Cap, tunic and trousers of grey green cloth, great-coat and cape of grey cloth, high boots of yellow leather; band and piping of cap, collar, facings, knots and linings of epaulettes, piping and lining of shoulder straps, and piping of trousers, poppy-coloured red; tunic buttons embossed in gold for officers, in brass for the men. The officers of the Guard Detachment will have a straight collar with gilt embroideries, and cuff facings also embroidered with gold. Officers of other detachments will have rounded collars and ordinary facings. Collars and facings of non-commissioned officers and men of the Guard Detachment will be furnished with yellow lace.

In addition to the cap, officers and men will receive a shako of grey green cloth with a silver star and white plume for the guard, black plume for the rest.

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 1879.....ST. JOHN, Maj. O. B. C., R.E.
 1880.....BARROW, Lieut. E. G., S.C.
 1882.....MASON, Lieut. A. H., R.E.
 1883.....COLLEN, Maj. E. H. H., S.C.
 1884.....BARROW, Capt. E. G., S.C.
 1887.....YATE, Lieut. A. C., S.C.
 1888.....MAUDE, Capt. F. N., R.E.
 1888.....YOUNG, Maj. G. F., S.C. (specially awarded a silver medal).
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 1890.....MAGUIRE, Capt. C. M., S.C.
 1891.....CARDEW, Lieut. F. G., S.C.
 1893.....BULLOCK, Maj. G. M., Devon. Regt.
 1894.....CARTER, Capt. F. C., Northumberland Fusiliers.
 1895.....NEVILLE, Lieut.-Col. J. P. C., S.C.
 1896.....BINGLEY, Capt. A. H., S.C.
 1897.....NAPIER, Capt. G. S. F., 2nd Bn. Oxfordshire Light Infantry.
 1898.....MULLALY, Maj. H., R.E.
 1898.....CLAY, Capt. C. H., S.C. (specially awarded a silver medal).
 1899.....NEVILLE, Col. J. P. C., S.C.
 1900.....THUILLIER, Capt. H. F., R.E.
 1900.....LUBBOCK, Capt. G., R.E. (specially awarded a silver medal).
 1901.....RANKEN, Lieut.-Col. G. P., S.C.

MacGregor Memorial Silver Medallists.

- 1889.....BELL, Col. M. S., V.C., R.E. (specially awarded a gold medal).
 1890.....YOUNGHUSBAND, Capt. F. E., K. Dn. Gds.
 1891.....SAWYER, Maj. H. A., S.C.
 1891.....RAMZAN KHAN, Havildar, 3rd Sikhs.
 1892.....VAUGHAN, Capt. H. B., S.C.
 1892.....JAGGAT SINGH, Havildar, 19th P. I.
 1893.....BOWER, Capt. H., S.C. (specially awarded a gold medal).
 1893.....FAZALDAD KHAN, Dafadar, 17th B. C.
 1894.....O'SULLIVAN, Maj. G. H. W., R.E.
 1894.....MULL SINGH, Sowar, 6th B. C.
 1895.....DAVIES, Capt. H. R., Oxf. L. I.
 1895.....GUNGA DYAL SINGH, Havildar, 2nd B. I.
 1896.....COCKERILL, Lieut. G. K., 28th P. I.
 1896.....GHULAM NABI, Private, Q. O. Corps of Guides.
 1897.....SWAYNE, Capt. E. J. E., 16th B. I.
 1897.....SHAHZAD MIR, Dafadar, 11th B. L.
 1898.....WALKER, Capt. H. B., D. of Corn. L. I.
 1898.....ADAM KHAN, Havildar, Guides Infantry.
 1899.....DOUGLAS, Capt. J. A., 2nd B. L.
 1899.....MIHR DIN, Naik, Bengal S. and M.
 1900.....WINGATE, Capt. A. W. S., 14th B. L.
 1900.....GURDIT SINGH, Havildar, 45th B. I.
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THE INDIAN ARMY.

The Publisher of the "ARMY & NAVY GAZETTE" begs to announce that, beginning on JANUARY 5, 1901,

COLOURED MILITARY TYPES OF THE INDIAN ARMY

Will be issued Monthly as Supplements to this paper, in the order given below:—

- I.—BENGAL. Showing a Risaldar-Major of 10th Lancers; Sowars of 15th and 18th Lancers; a Sepoy of the 2nd, and Subadar of the 5th Goorkhas; Sepoys of 20th and 25th Infantry ... Ready Jan. 5, 1901.
- II.—BENGAL. Showing Risaldars of the 1st and 2nd and Sowar of the 11th Lancers; Sepoys of the 7th and 32nd Infantry; a Subadar of the 14th and Naick of the 15th Infantry ... Ready Feb. 2, 1901.
- III.—PUNJAB FRONTIER FORCE. Showing Sowar of 1st and Risaldar of 3rd Punjab Cavalry; Sepoy and Sowar of Guides; Jemadar of 1st and Sepoy of 3rd Infantry; Gunner of No. 1 Kohat Mountain Battery ... Ready Mar. 2, 1901.
- IV.—MADRAS. Jemadar of Governor's Body Guard; Subadar of 1st and Sowar of 2nd Lancers; Sepoys of 1st and 31st Infantry; Jemadars of 14th Infantry and Sappers and Miners ... Ready April 6, 1901.
- V.—BOMBAY. Jemadar of 2nd Lancers; Sowar of 4th Cavalry; Gunner of No. 1 Mountain Battery; Subadar of 1st Grenadiers; Havildar of 5th Light Infantry; Sepoy of 29th Infantry ... Ready May 4, 1901.
- VI.—CORPS UNDER THE ORDERS OF THE GOVERNMENT OF INDIA. Showing Risaldar-Major of 2nd and Sowar of 3rd Lancers of Hyderabad Contingent; Risaldar of Central India Horse; Colour-Havildar of Deoli Irregulars; Sepoy of Malwa Bhils; Havildar of Merwara Battalion; Jemadar of 4th Infantry of Hyderabad Contingent ... Ready June 1, 1901.
- VII.—BRITISH OFFICERS OF NATIVE INDIAN CAVALRY REGIMENTS. Showing 3rd Bombay Light Cavalry; 5th Punjab Cavalry; 18th Bengal Lancers; 6th Bengal Cavalry; 13th Bengal Lancers; Central India Horse; and 2nd Madras Lancers ... Ready July 6, 1901.
- VIII.—OTHER FORCES. Showing Jodhpur Lancers; Elephant Battery, R. G. A.; Bombay Governor's Body Guard; Bengal Governor-General's Body Guard ... Ready Aug. 3, 1901.

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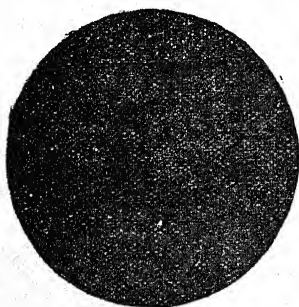
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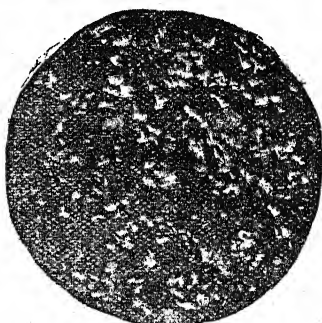
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United Service Institution of India.

RULES OF MEMBERSHIP.

GENTLEMEN who may wish to become members are requested to be kind enough to forward their donations and subscriptions at the time they express a wish to join the Institution.

Money Orders, Transfer Receipts, etc., should be made payable to the "Secretary."

Members proceeding to England on leave, who wish the Journal to be forwarded to them while absent from India, should inform the Secretary, and arrange for the postage.

When a member appears in orders for leave to England, his Journal is not despatched unless he asks for it, and while absent from India his subscription is not payable unless the Journal is supplied.

Members on return from furlough can obtain the numbers of the Journal that have been published during their absence, by paying the subscription for that period; and all members on returning to India should inform the Secretary of the fact.

All officers of the Royal Navy, and Army, and of Volunteer Corps in India, and Gazetted Government Officers shall be entitled to become members on payment of the entrance fee and annual subscription.

Life members of the Institution will be admitted on the following terms :—

Rs. 50+ entrance donation = Rs. 55.

Ordinary members of the Institution will be admitted on payment of an entrance fee of Rs. 5 on joining, and an annual subscription of Rs. 5 *to be paid in advance*. The period of subscription commences on 1st January.

Sergeants' Messes and Regimental Libraries, Reading and Recreation Rooms can obtain the Journal on payment of the annual subscription (Rs. 5) only, but cannot be life members.

When a member joins the Institution on or after the 1st October, having paid his first annual subscription, he will not be charged a second subscription on the following 1st January, but it will become due on 1st January of the second year.

Rules for Contributors to the "Journal of the United Service Institution of India."

1. All papers must be written in a clear, legible hand, and only on one side of the paper. All plans must have a scale on them.

2. No remarks of a personal nature, or in any way subversive of discipline, will be permitted.

3. Anonymous contributions under a *nom de plume* will not be accepted nor acknowledged; all contributions must be sent to the Secretary under the name of the writer, and the paper will, if accepted, be published under that name unless a wish is expressed for it to be published either under his initials only or anonymously. The Executive Committee will decide whether the wish can be complied with.

4. Papers will be published, if passed by the Executive Committee of the Council.

5. The Council do not undertake to authorise the publication of such papers as are passed, in the order in which they may have been received.

6. Unless the contributor states at the end of his paper that he wishes it published complete, or not at all, the Executive Committee of the Council will make such alterations in it as they deem necessary.

7. Contributors will be supplied with twelve copies of their papers *gratis*, provided they apply for them before they are in the press.

8. Manuscripts of original papers sent for publication in the Journal will not be returned to the contributor unless he expresses a wish to have them back and pays the postage.

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N.B.—The entire charge is taken of pupils whose parents reside in
India.

STAFF COLLEGE.

TWO HUNDRED AND THIRTY-EIGHT OFFICERS
Have passed into the Staff College from this establishment, of whom
EIGHTY have been in the first ten and THIRTEEN were FIRST on
the whole list.

PLACES taken in the various subjects include no less than EIGHTY-
ONE FIRSTS, SEVENTY-THREE SECONDS and NINETY THIRDS.

MILITARY HISTORY: the highest marks ever given were obtained by one of our pupils and
on another occasion full marks were obtained for the "Special Campaign" paper.
For this Captain James prepares every year a pamphlet as soon as the campaign is
published in Army Orders. In the last four years the 1st place has been taken
three times.

IN MATHEMATICS, another important subject, full marks were won in one of the papers
in 1898. Ten firsts, Ten seconds, eight thirds have been taken by our pupils.
GEOGRAPHY as a separate subject was instituted in 1895, the first place was taken in '95,
'97 and '99. We have Special Geography notes which can only be obtained by those
who read with us. Three firsts have been taken by our pupils.

The above results are far in excess of the results obtained by any other establishment.
Officers reading in India can be supplied with all notes, books, etc., on the special
campaign and other subjects, and with information as to how best to read for
the examination.

AUGUST, 1900.

At this Examination TEN only Passed on the Competitive List owing to the War in South Africa, and
of these the following SIX PASSED from us:—

Capt. C. G. Stewart, D.S.O.	...	...	Royal Artillery.
Capt. R. F. G. Bond	...	...	Royal Engineers.
J. R. Chancellor, Esq., D.S.O.	...	...	Royal Engineers.
Capt. R. F. Uniacke	...	...	Royal Inniskilling Fusiliers.
Capt. H. W. R. Senior	...	...	Indian Staff Corps.
Capt. C. Rattray	...	...	Indian Staff Corps.

The following SIX, who read with us, also received NOMINATIONS:—

Capt. J. S. Cayzer	...	...	7th Dragoon Guards.
Capt. J. Vaughan	...	...	7th Hussars.
V. R. Brooke, Esq.	...	...	9th Lancers.
A. Symons, Esq.	...	...	13th Hussars.
Capt. J. A. S. Tolloch	...	...	Royal Engineers.
Capt. G. Meynell	...	...	1st Batt., Shropshire Light Infantry.

And, in addition, the following QUALIFIED:—

Capt. G. McK. Franks	...	...	Royal Artillery.
Capt. W. K. Scharlieb	...	...	Indian Staff Corps.
Capt. L. A. Watson	...	...	Indian Staff Corps.
S. W. King, Esq.	...	...	Indian Staff Corps.

PROMOTION.—Six HUNDRED and TWENTY officers have passed, many of whom have
obtained "Special certificates" and "distinguished" in many subjects.

OTHER SUCCESS IN 1897-98 AND 1899.

WOOLWICH	...	...	Forty-seven.
SANDHURST	...	...	Ninety-seven.
INDIAN POLICE	...	...	Six.
MILITIA LITERARY	...	...	Fifty-eight.
COMPETITIVE	...	...	One hundred and forty-one.
	...	...	Other educa-

REGULATIONS OF THE United Service Institution of India.

I.—Designation.

THE Institution shall be named "THE UNITED SERVICE INSTITUTION OF INDIA."

II.—Object.

The design of the Institution shall be the promotion of Naval and Military Art, Science and Literature.

III.—Proceedings.

The proceedings of the Institution will embrace—

1. The delivery of lectures at any station in India.
2. Debates on military subjects at any station in India.
3. The publication of a Journal, *quarterly*, containing:—
 - (a) Reports of Lectures with the discussions thereon.
 - (b) Reports of Debates with the discussions thereon.
 - (c) Original Papers on military subjects which the author is unable or unwilling to deliver in the form of a lecture.
 - (d) Opinions of members on matters published in former numbers.
 - (e) Selections from the records of the Military Departments of India (by authority).
 - (f) Translations from foreign works of military interest selected by the Council or sent by members.
 - (g) Short notes on professional subjects.
 - (h) Notices of inventions of military importance.
 - (i) Correspondence on professional subjects.
 - (j) Occasional Papers.

IV.—Composition.

1. The following shall be invited to be Patron and Vice-Patrons *ex-officio*:—

Patron.

H Excellency the Viceroy and Governor-General of India.

Vice-Patrons.

His Excellency the Governor of Madras.
 Ditto ditto of Bombay.
 Ditto the Commander-in-Chief in India.
 His Honor the Lieutenant-Governor of Bengal.
 Ditto ditto of N. W. P. & Oudh.
 Ditto ditto of Punjab.
 Ditto ditto of Burma.
 The Military Member of the Viceregal Council.
 His Excellency the Naval Commander-in-Chief, East Indies.
 The Lieutenant-Generals Commanding the Forces, Punjab,
 Bengal, Madras, and Bombay.

2. Besides the above, Vice-Patrons shall be limited to members of the Royal Family, officers distinguished for their services, and members who have been benefactors to the Institution.

3. All officers of the Royal Navy and Army, and of Volunteer Corps in India and gazetted Government officers, shall be entitled to become members without ballot.

The Council shall have the power of admitting as honorary members the members of the Diplomatic Corps, Foreign Naval and Military officers, Foreigners of distinction, other eminent individuals, and benefactors to the Institution, not otherwise eligible to become members.

V.—Government.

1. The Government of the Institution shall be vested in a Council to be elected annually on the 1st May, or as soon after as possible, and to be composed as follows:—

(a) Fifteen members (not necessarily selected on account of their official positions), residents of Simla.

(b) Five members from each command.

(c) Two members from the Royal Indian Marine.

(d) Four volunteer officers, one from each command.

2. The election of (a) shall be carried out as follows:—

Early each year, the Secretary will circulate to members, resident in Simla, a printed list of members of the Institution who are permanent residents of Simla, and who are willing to take upon themselves the duties of members of the Council (those willing to serve on the Executive Committee to notify the same), and each electing member will record his vote by making a mark against the names of the fifteen candidates he selects, returning the printed list to the Secretary.

3. The election of the members of Council of the four commands will be arranged for on the elective principle in those commands, the names of the selected candidates only being sent to the Secretary. Each command will, in the same way, arrange for the election of a volunteer officer to represent it on the Council.

4. An Executive Committee, consisting of a President and two members chosen from the Council, will be annually elected on the 1st May, or as soon after as possible, for the transaction of all the ordinary business of the Institution during the year.

5. Officers will be invited to become corresponding members to forward the objects of the Institution, and to communicate with the Council.

6. A Secretary shall be elected by the Council for the purpose of keeping, under the order of the Council, the accounts, editing the Journal, and conducting correspondence, etc. He shall receive a monthly allowance of Rs. 100, and shall only hold the appointment for one year, unless the Council consider his re-appointment desirable.

7. The duties of the Council shall be to exercise a general control over the welfare and expenditure of the Institution.

8. The Executive Committee of the Council will frame such Bye-laws, for the general conduct of the Institution, as may appear to them necessary, subject to confirmation by the Council at the next General Meeting. All questions, which the Executive Committee are unable to dispose of, should be referred by the Secretary to all the members of the Council who are in Simla. The Executive Committee will pass papers for publication.

9. A General Meeting of the Council will take place on the 1st May, or as soon after as possible, for the audit of the accounts, award of the Gold Medal, and such other business as may be brought before it; and another, *when necessary*, on the 1st October, or as soon after as possible, to consider any questions connected with the Institution that require settlement prior to the close of the Simla season.

10. Three members of the Council will form a quorum, and the senior member will preside. There will be no formally elected Chairman or Vice-Chairman of the Council.

11. Non-commissioned officers and soldiers of the Army and Volunteer corps shall, when practicable, be permitted to attend lectures, etc., and introduction by a member shall be sufficient to admit non-subscribers for the same purpose, except when otherwise notified.

12. At the General Meeting of the Council a statement of the accounts and progress of the Institution will be laid before the Council by the Secretary. The accounts will be annually audited by a competent Auditor.

13. A list of Life and Ordinary Members will be printed annually and issued with the report of the General Meeting.

14. The financial year of the Institution commences on the 1st January.

15. An annual donation of Rs. 3,000 is received from the Government of India in support of the Institution.

VI.—Membership.

1. Life members of the Institution will be admitted on the following terms :—

Rs. 50 + entrance* donation = Rs. 55.

2. Ordinary members of the Institution will be admitted on payment of an entrance-fee* of Rs. 5 on joining, and an annual subscription

* Subscribing members of the Royal United Service Institution, Whitehall, London, are not liable for entrance-fee while the affiliation rules are in force.

of Rs. 5, *to be paid in advance*. The period of subscription commences on 1st January.

3. Honorary members shall be entitled to attend the Lectures and War Games and to use the premises and Library of the Institution without payment; but should they desire to be supplied with the Journal, an annual payment of Rs. 6, in advance, will be required.

4. Sergeants' Messes and Regimental Libraries, Reading and Recreation Rooms can obtain the Journal on payment of the annual subscription (Rs. 5) only.

5. If any member fails to pay his subscription for any financial year (ending 31st December) before the 1st June in the following year, a notice will be sent to him by the Secretary calling on him to pay. If the subscription is not paid by 1st January following, his name will be struck off the roll of members.

6. When a member joins the Institution on or after the 1st October, having paid his first annual subscription, he will not be charged a second subscription on the following 1st January, but it will become due on 1st January of the second year.

7. Members proceeding to England on leave, who wish the Journal to be forwarded to them while absent from India, should inform the Secretary, and arrange for the postage.

8. When a member appears in orders for leave to England, his Journal is not despatched unless he asks for it, and while absent from India his subscription is not payable unless the Journal is supplied.

9. Members on return from furlough can obtain the numbers of the Journal that have been published during their absence, by paying the subscription for that period; and all members on returning to India should inform the Secretary of the fact.

By Order of the Council,

C. H. CLAY, *Captain,*
Secretary, U. S. I. of India.

14th July 1899.

BYE-LAWS.

Rules for Contributions to the " Journal of the United Service Institution of India."

1. All papers must be written in a clear, legible hand, and only on one side of the paper. All plans must have a scale on them.
 2. No remarks of a personal nature, or in any way subversive of discipline, will be permitted.
 3. Anonymous contributions under a *nom de plume* will not be accepted nor acknowledged; all contributions must be sent to the Secretary under the name of the writer, and the paper will, if accepted, be published under that name unless a wish is expressed for it to be published either under his initials only or anonymously. The Executive Committee will decide whether the wish can be complied with.
 4. Papers will be published, if passed by the Executive Committee.
 5. The Council do not undertake to authorise the publication of such papers as are passed, in the order in which they may have been received.
 6. Unless the contributor states at the end of his paper that he wishes it published complete, or not at all, the Executive Committee will make such alterations in it as they deem necessary.
 7. Contributors will be supplied with twelve copies of their papers, *gratis*, provided they apply for them before they are in the press.
 8. Manuscripts of original papers sent for publication in the Journal will not be returned to the contributor unless he expresses a wish to have them back and pays the postage.
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Rules for the conduct of Meetings and Debates of the United Service Institution of India.

1. The subject of all lectures and debates must be submitted for the sanction of the Executive Committee before such can be held.
2. The senior member present, being an officer of the Navy or Army, shall officiate as Chairman at meetings when no other Chairman has been specially invited.
3. Speakers should address their remarks to the Chairman and not to the meeting.
4. In the event of more than one member rising to speak at the same time, the Chairman's decision as to who shall be heard first shall be final.
5. If called upon to do so by the Chairman, a speaker shall at once sit down.
6. No remarks of a political or personal nature, or in any way subversive of discipline or harmony, will be permitted.

7. Speakers are requested to furnish the Secretary with a copy of their remarks, paper or lecture for publication in the Journal.

8. No interruptions will be permitted during the reading of a paper or speech of another member.

9. Meetings shall be dissolved or adjourned on the decision of the Chairman.

10. When the general public is admitted to lectures, etc., a certain part of the room is to be reserved for members and their friends accompanying them, the Secretary making the requisite arrangements.

11. Paid reporters will, under ordinary circumstances, be entertained at the expense of the Institution for noting down discussions only. When hired to take down a lecture or a paper read at the Institution, the report will be revised by the Secretary before publication in the Journal.

12. Accommodation will be reserved for representatives of the Press desirous to report lectures, papers read or discussions held at the Institution, but such reports, unless revised by the Secretary, will not be recognised as bearing the impress of the Institution.

By Order of the Council,

C. H. CLAY, *Captain,*

Secretary, U. S. I. of India.

14th July 1899.

LIBRARY RULES.

United Service Institution of India.

1. The Library is only open to members of the United Service Institution of India, and members are requested to look upon books and maps as not transferable to their friends.

2. A member will not be allowed to have from the Library, at one time, more than three books or sets of books, and two maps.

3. Books and maps are only issued between the hours of 10 A.M. and 5 P.M. during the summer, and 10-30 A.M. and 4-30 A.M. during the winter.

4. Books and maps taken from or returned to the Library are to be entered in the book kept for the purpose.

5. Books and maps for three months after receipt will be treated as New Books. These, together with all the works under the heading I.—Cyclopædic, and all books and maps noted as *Confidential* or *Reference only* must not be removed from the Reading-Room.

6. No particular limit is set to the number of days for which a member in Simla may keep a book or map, the Council being desirous of making the Library as useful as possible to such members as may be undergoing any particular course of study; but at the same time if within a fortnight of the issue of a book or map to any member, the book or map is required by any other member, the Secretary is authorised to desire its immediate return for fresh issue.

7. Lost and defaced books or maps shall be replaced at the cost of the member to whom they were issued. A book or map shall be held to be lost when a member omits to return it on receipt of a registered cover from the Secretary, and on the expiry of two weeks (in the case of members residing in England, three months) from the despatch of such a cover, if reasonable explanation be not forthcoming, a new copy shall be bought and charged in the member's account. In the case of lost books that are out of print, the value shall be fixed by the Executive Committee and the amount, when received, spent in the purchase of a new book.

8. Books or maps are issued to members at out-stations under the above rules, and subject to the following further conditions: (a) all applications for books and maps should be accompanied by the requisite sum for postage, otherwise they will be sent bearing; (b) such books or maps must be returned *post paid* within three weeks of date of issue; (c) if at any time a book or map issued to a member is required for reference by an intending lecturer, the Secretary is authorised to re-call such book or map immediately, but he will re-issue it, when available, and if desired, to the member from whom it was recalled. In such cases the postage on re-call and re-issue will be paid by the Institution.

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9. Members are invited to note any books or maps which they think might with advantage be procured for the Institution. A list of the books or maps thus suggested will be submitted periodically to the Executive Committee, and action taken as may be deemed advisable.

10. Members are invited to contribute presents of books, maps and photographs of Naval or Military interest. These may be sent "bearing" to the Secretary, who will note them as "presented," and duly acknowledge their receipt.

11. The issue of a book or map under these rules to any member implies the latter's compliance with the rules and his willingness to have them, if necessary, enforced against him.

By order,

C. H. CLAY, *Captain,*

Secretary, U. S. I. of India.

SIMLA;

14th July 1899. }

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